

ANNUAL ENVIRONMENTAL REPORT 2024–2025

URALLA LANDFILL, URALLA

Prepared for URALLA SHIRE COUNCIL

Prepared by RCA Australia

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8 December 2025

Uralla Shire Council
PO Box 106
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Attention: Dr Isaac Arah (Manager Environment and Waste)

Geotechnical Engineering
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Environmental Monitoring
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Occupational Hygiene

ANNUAL ENVIRONMENTAL REPORT 2024–2025

URALLA LANDFILL, URALLA

1 INTRODUCTION

This annual environmental report (AER) has been prepared in accordance with the Environment Protection Licence for Uralla Landfill (EPL 5899, Ref [1]), which requires Uralla Shire Council (USC) to provide an assessment of the environmental performance relevant to the EPL conditions for the annual reporting period.

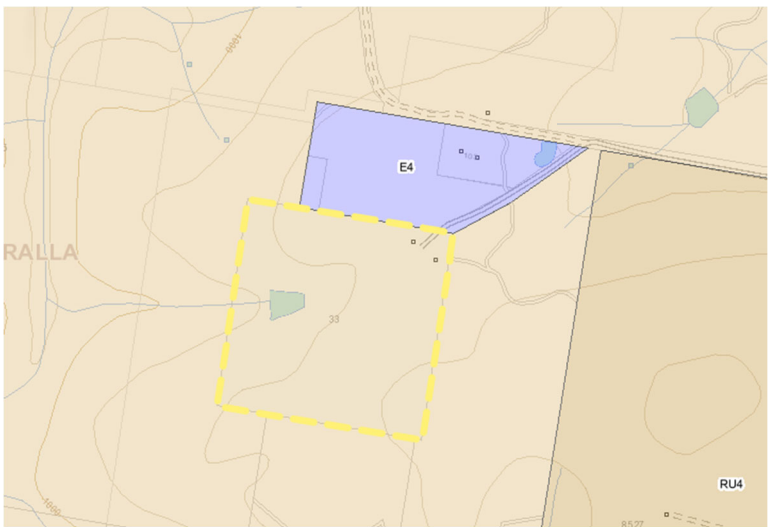
The objective of this AER is to provide a holistic assessment of the Uralla Landfill environmental monitoring within the current reporting period and to provide discussion and recommend potential response actions to improve the environmental performance of the landfill.

2 SITE IDENTIFICATION AND DESCRIPTION

The Uralla Landfill (the site) is located on Rowan Avenue, off the New England Highway Uralla, NSW approximately 1.5 kilometres to the south west of the main town of Uralla. The site is identified as Lot 172 in DP 755846, Uralla NSW 2358.

Additional site details are shown in **Table 1**.

Table 1 *Site Details*

Current zoning (Ref [2])	 RU2 – Rural Landscape (site as per yellow dashed outline).
Current use	Landfill and community recycling centre.
Size of site	Approximately 16 hectares.
Land use to the:	
North	E4 – General Industrial
South	RU2 – Rural Landscape.
East	RU2 – Rural Landscape and RU4 – Primary Production Small Lots.
West	RU2 – Rural Landscape.
Nearest sensitive receptor (human health)	Community recycling centre and computer store located onsite. Industrial building located approximately 150 m to the north and a residential property approximately 500 m to the north. Further residential properties are situated within Uralla located approximately 1 km northeast of the site.
Nearest sensitive receptor (environmental)	A small creek located directly adjacent to the western boundary which is a tributary creek to the larger Kentucky Creek and Rocky River located approximately 1 km to the northwest of the site. Surface water from the site drains to the west via an established channel.

Drawing 1, Appendix A shows the locality and the layout of the site.

2.1 SITE HISTORY

The site was originally a 4 ha landfill operated by Gostwyck Shire Council until the formation of USC in 1947 at which time it undertook operations. An application was approved by the Health Commission of NSW in 1975 for the operation of a landfill over the entire (current) Lot 172 site. The location of the original 4 ha landfill is unknown.

The site was originally utilised for the disposal of nightsoil and refuse until the discontinuing of the disposal of nightsoil in the mid 1980's. Septic tank effluent was intermittently disposed of at the site until the construction of the Armidale City Council's sewage treatment works disposal system in late 1997 / early 1998 at which time disposal ceased.

Between the initial operation of the site and the completion of the landfill environmental management plan in December 1997 (Ref [3]), several different waste streams had been noted as being brought into the landfill site. These included:

- Inert waste.
- Putrescible waste.
- Green waste.
- Contaminated waste including, but not limited to, asbestos, material from a pole plant including timber railway sleepers and concrete blocks. This material was disposed into two (2) specifically surveyed sites within the landfill.
- Nightsoil (septic tank effluent).

Other existing uses on the site included:

- Recycling centre (shed, recycling wall, compound and bays for crushed glass).
- General recycling.
- Dog pound.

3 CURRENT LANDFILL OPERATIONS

During the reporting period the site comprised an active landfilling area within the northern portion of the site, a leachate pond located in the down gradient western portion of the site and two (2) large structures which included a recycling facility and office space, sorting facility, a community computer servicing facility and a shipping storage container.

3.1 TOTAL WASTE RECEIVED

During the 2024 – 2025 reporting period a total of 4,840¹ tonnes of waste was accepted to the site. The predominant waste received was municipal waste which includes mixed (commercial & construction) waste, vegetation or garden waste, commingle recycling, paper & cardboard, metals (of all kinds) and E-waste (electronic & electrical). A breakdown of the waste type is shown below in **Figure 1**.

¹The Uralla Shire Council Waste Facilities has no weighbridge and hence weights are estimations depending on capacities of vehicles or storage containers used to drop off waste.

Inbound Waste Tonnage for 2024-2025

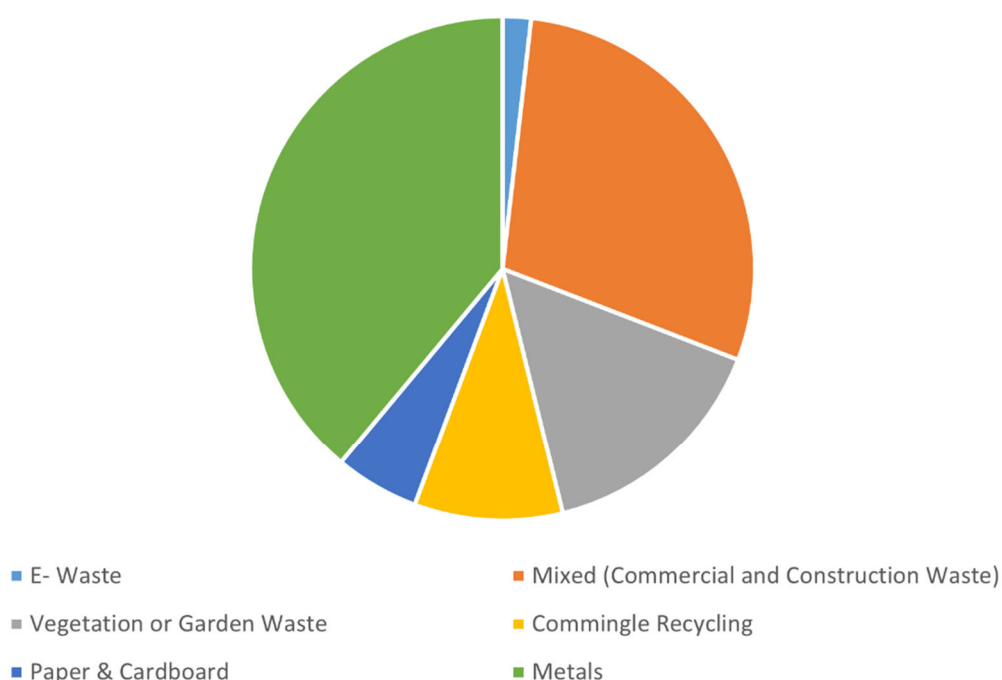


Figure 1 *Inbound Waste 2024–2025*

A total of approximately 674.5 tonnes of material was exported from the Uralla Landfill site during the 2024–2025 reporting year (October 2024–October 2025) as presented in **Table 2** below. The predominant waste exported were metals (of all kinds) and cardboard. It is noted that tin cans were sold together with the metals (of all kinds) whilst batteries were captured under the CRC programme.

Table 2 *Exported Materials during the reporting period*

Material	Tonne
Cardboard	153
Plastics	28
Metals (of all kinds)	486
Car Bodies	1.2
Car Batteries	6.3
Batteries	0
Tin cans	0

3.2 MONITORING EVENTS

The monitoring schedule as per the EPL is presented in **Table 3** below; a total of two (2) quarterly and two (2) biannual (six-monthly) rounds are required. Timing of the rounds is not specified however it is understood that the purpose of the sampling is to provide for seasonal variation over the twelve (12) month period and as such sampling rounds would be expected to occur once within every three (3) month period.

Table 3 *EPL Schedule of Fieldwork and Analysis for Quarterly and Biannual Monitoring Rounds*

Monitoring Item	Quarterly	Biannual
Surface Gas	✓	✓
Accumulated Gas	✓	✓
Leachate (UL1)	Water gauging	Alkalinity, Metals (As, B, Cr, Fe, Pb, Mn, Zn), Cl, NO _x , OCP, OPP, P, TKN, TOC, VOC)
Leachate (EPL2)	Sample during discharge. Metals (As, B, Cu, Cr, Fe, Mn, Zn), BTEX, Conductivity, Dissolved Oxygen, NO _x , Cations (Ca, Mg, Na, K), Anions (Cl, SO ₄ , Alkalinity), pH, P, TKN, TOC, TSS.	
Surface Water (US1)	Depth gauging.	Alkalinity, Metals (As, Cr, Cu, Fe, Mn, Zn), BTEX, Cl, NO _x , Cations (Ca, Mg, Na, K), P, SO ₄ , TKN, TOC, TSS).
	Sample during discharge. Metals (As, B, Cu, Cr, Fe, Mn, Zn), BTEX, Conductivity, Dissolved Oxygen, NO _x , Cations (Ca, Mg, Na, K), Anions (Cl, SO ₄ , Alkalinity), pH, P, TKN, TOC, TSS.	
Surface Water (US2)	Sample during discharge. Metals (As, B, Cu, Cr, Fe, Mn, Zn), BTEX, Conductivity, Dissolved Oxygen, NO _x , Cations (Ca, Mg, Na, K), Anions (Cl, SO ₄ , Alkalinity), pH, P, TKN, TOC, TSS.	
Surface Water (US3)	Sample during discharge. Metals (As, B, Cu, Cr, Fe, Mn, Zn), BTEX, Conductivity, Dissolved Oxygen, NO _x , Cations (Ca, Mg, Na, K), Anions (Cl, SO ₄ , Alkalinity), pH, P, TKN, TOC, TSS.	
Groundwater (UW1)	Depth gauging.	Field readings.
Groundwater (UW2)	Depth gauging.	Alkalinity, Metals (As, Fe, Mn), CO ₂ , Cl, Dissolved oxygen, NO _x , TKN, TOC.
Groundwater (UW3)	Depth gauging. Alkalinity, Metals (As, Fe, Mn), CO ₂ , Cl, NO _x , TKN, TOC.	Alkalinity, Metals (As, Fe, Mn), CO ₂ , Cl, Dissolved oxygen, NO _x , TKN, TOC.

See glossary for explanation of acronyms.

A total of four (4) monitoring events have been undertaken by RCA in the reporting period:

- January 2025 quarterly round. Comprised surface gas and groundwater sampling along with field readings of surface water and leachate.
- April 2025 biannual round. Comprised surface gas, leachate, surface water and groundwater sampling.
- June 2025 quarterly round. Comprised surface gas and groundwater sampling along with field readings of surface water and leachate.
- September 2025 biannual round. Comprised surface gas, leachate, surface water and groundwater sampling.

This sample schedule is in compliance with the EPL which requires four (4) sampling rounds with each round in a different season, noting that there is no specified requirement for the period in which the biannual round is undertaken and during this reporting period the biannual rounds were in Autumn and Spring whereas previously these have been Summer and Winter.

4 WEATHER

Meteorological monitoring data has been collected from the Uralla Bureau of Meteorology (BOM) weather station located at Dumaresq Street Uralla (056034), the Armidale Tree Group Nursery site located at Mann Street (056037) and the Armidale Airport BOM weather station (056238). The Uralla BOM does not supply current evaporation or temperature readings. Therefore, evaporation and temperature readings were obtained from the Armidale BOM stations², located approximately 25km from the site.

4.1 RAINFALL AND EVAPORATION

The Uralla BOM station (056034) recorded 909 mm of rain during the reporting period, representing an increase of 25.2% compared to the 726 mm recorded during the previous period. This total is above the historical average of 792.5 mm. It is noted that approximately 400 mm of snow was received at the site in August 2025; this does not appear to have been recorded (at least in entirety) as rainfall however its melting was the cause of the discharge event (refer **Section 6.4**).

Evaporation was measured using a Class 'A' pan, which provides a conservative estimate of actual surface evaporation. Total evaporation recorded for the reporting period was 1,074 mm.

Rainfall and evaporation data are shown in **Figure 2**. It is noted that the data shown for October 2024 and October 2025 is representative of approximately half of the month each as it is based on the site EPL anniversary date (Ref [1]) whereas the averages are for the whole month.

² Most observations from the Armidale Tree Group Nursery site (056037) in Mann Street, but some from Armidale Airport.

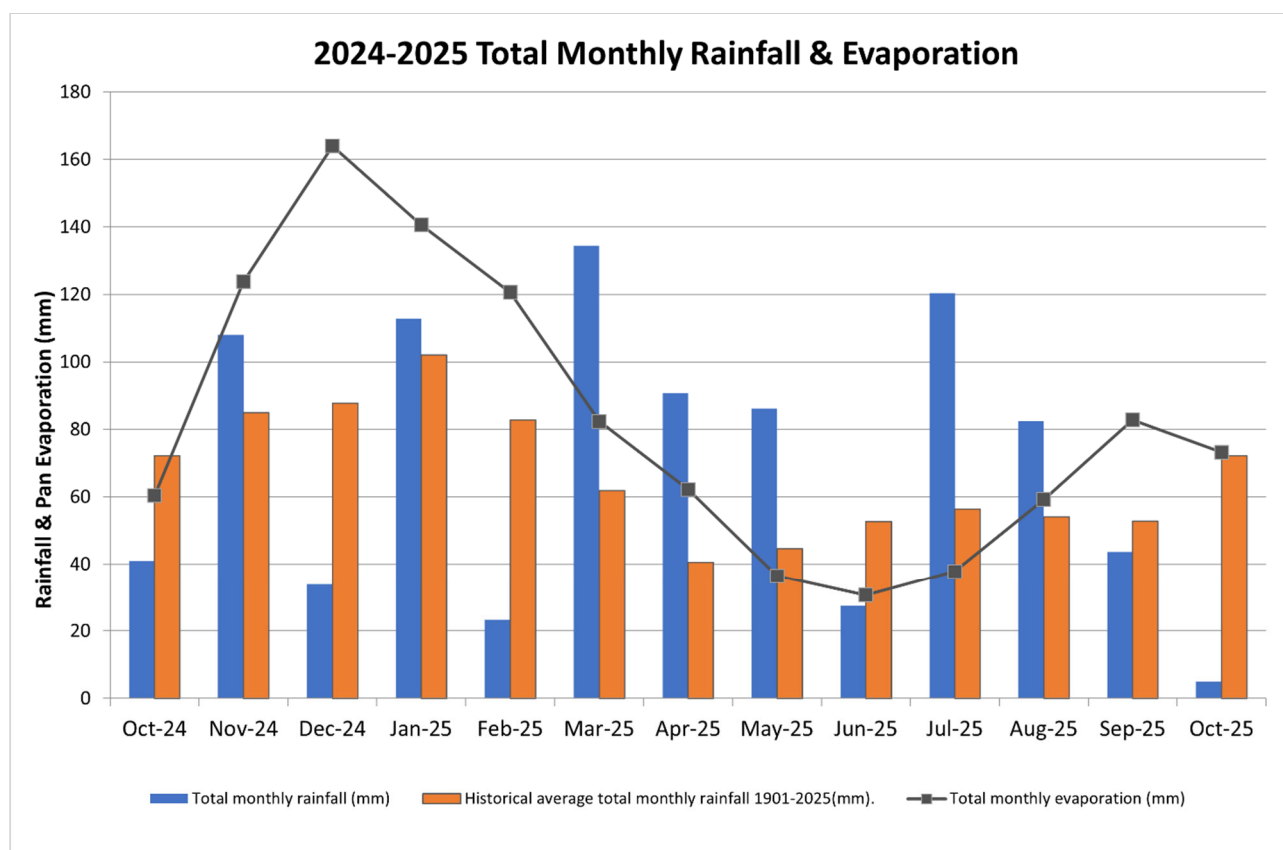


Figure 2 Total Monthly Rainfall and Evaporation during the 2024-2025 reporting period

During the 2024–2025 reporting period the following observations were noted:

- The monthly rainfall exceeded the monthly average of 69.92 mm seven (7) times throughout the reporting period (November 2024, January 2025, March 2025 to May 2025 and July 2025 to August 2025 noting that ~400 mm of snow was not included in the August measurements) and comprised approximately 81% of the annual rainfall. The monthly rainfall also exceeded the historical average for that specific month seven (7) times throughout the reporting period (November 2024, January 2025, March 2025 to May 2025 and July 2025 to August 2025).
- The highest monthly rainfall in the 2024–2025 period was recorded in March 2025 at 134.4 mm, while the lowest was in February 2025 at 23.2 mm.
- The monthly evaporation exceeded the monthly average of 82.62 mm five (5) times throughout the reporting period (November 2024 to February 2025 and September 2025) and comprised approximately 67% of the annual evaporation.
- The monthly evaporation was greater than the monthly rainfall events recorded throughout the reporting period except for the period from March 2025 to May 2025 and July 2025 to August 2025.
- The average of the monthly rainfall was less than the average of the monthly evaporation.

Large rainfall events, defined as greater than 25 mm in a 24-hour period, occurred on seven (7) occasions:

- Approximately 55% of November 2024 rainfall was in two (2) events:
 - 25.8 mm of rainfall in the period 9am 11/11/2024 – 9am 12/11/2024

- 33.2 mm of rainfall in the period 9am 29/11/2024 – 9am 30/11/2024
- Approximately 32% of March 2025 rainfall was in one (1) event of 43 mm from 9am 28/3/2025 to 9am 29/3/2025.
- Approximately 34% of April 2025 rainfall was in one (1) event of 31 mm from 9am 26/4/2025 to 9am 27/4/2025
- Approximately 40% of May 2025 rainfall was in one (1) event of 34.2 mm from 9am 21/5/2025 to 22/5/2025
- Approximately 48% of July 2025 rainfall was in two (2) events:
 - 31.6 mm of rainfall in the period 9am 17/7/2025 – 9am 18/7/2025
 - 26 mm of rainfall in the period 9am 22/7/2025 – 9am 23/7/2025

4.2 TEMPERATURE

The average monthly maximum and minimum temperature recorded at the Armidale BOM station compared to the historical monthly averages for the period 1994 – 2025 are shown in **Figure 3**.

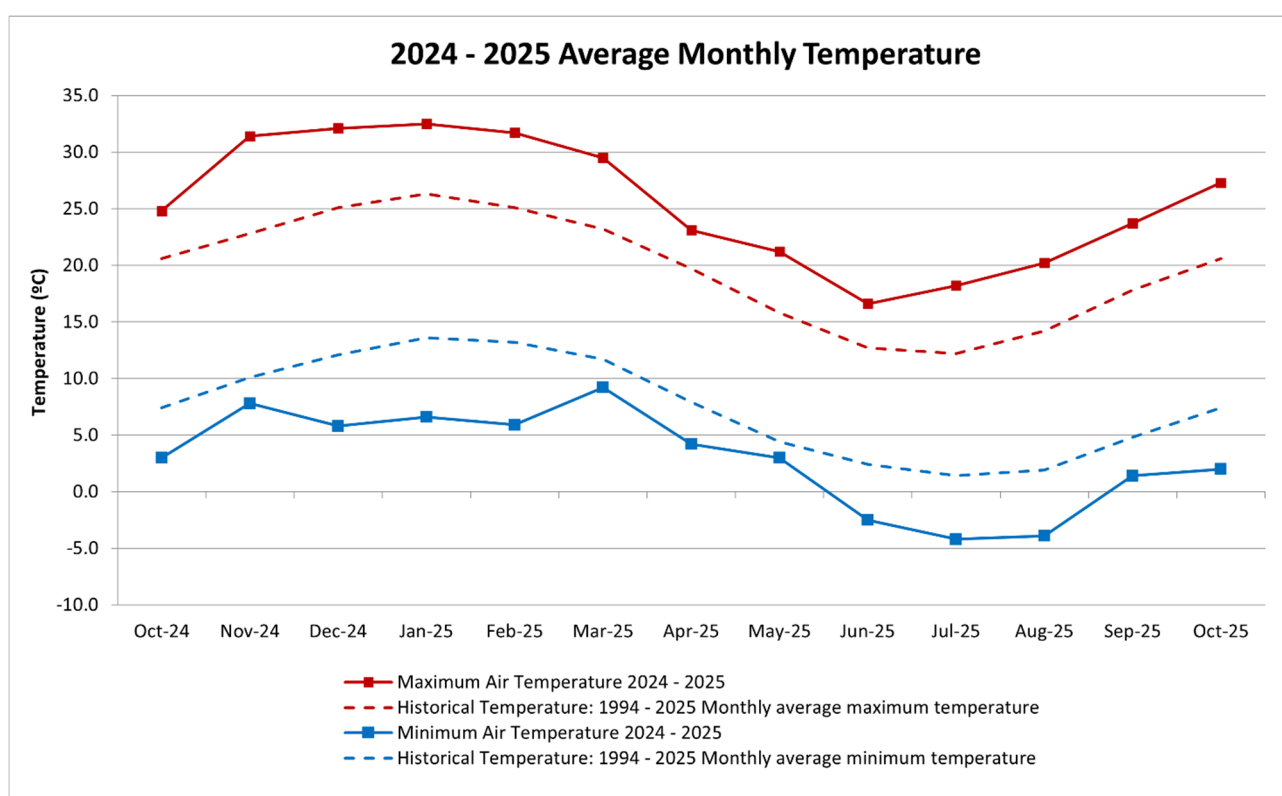


Figure 3 Average Monthly Minimum and Maximum Temperatures 2024–2025

The maximum monthly temperatures during the reporting period were more than the historical monthly averages. The annual average deviation of the maximum temperature (average of monthly difference between historical and 2024–2025 maximum temperature) was 5.9°C. The November 2024 maximum monthly average showed the greatest deviation from the maximum historical average (8.6°C).

The minimum monthly temperatures for the reporting period were less than the historical monthly averages. The annual average deviation of the minimum temperature (average of monthly difference between historical and 2024–2025 minimum temperature) was -4.6°C . The February 2025 minimum monthly average showed the greatest deviation from the minimum historical average (-7.3°C).

5 LEACHATE MANAGEMENT

Leachate is formed as a result of the percolation of rainfall and moisture through waste. Leachate is mainly generated from the current and existing tipping areas located within the northern and north western portions of the site. The leachate pond is considered to intercept most overland flows with the exception of large rainfall events (Ref [5]).

The chemical composition of leachate is dependent on the type of waste and the quantity generated is largely dependent on rainfall.

Leachate within the onsite leachate pond is pumped through to an irrigation / sprinkler system which applies the leachate to the existing landfilling area up-gradient of the leachate pond (refer **Drawing 1, Appendix A**).

Even though the desilting of the leachate pond in the previous reporting year increased the capacity of the dam, the 2 August 2025 snowstorm disaster that affected most towns in the New England Region resulted in a two (2) day overflow of the dam from the melting ice. Pumping of leachate (irrigation) is still ongoing.

Council's project to allow for the disposal of leachate to the Uralla town sewer has not been completed as there has been concerns of potential PFAS contamination.

6 FIELDWORK

6.1 GROUNDWATER MONITORING AND SAMPLING METHODOLOGY

The current groundwater monitoring programme has been established at the site to assist in comparing the groundwater monitoring results with leachate indicator parameters to determine any potential leachate impacts.

The groundwater monitoring network consists of one (1) bore located upgradient of the site (UW1) and two (2) bores (UW2 and UW3) located downgradient of the landfill. Bore UW3 is the downgradient well and is located adjacent to the leachate dam wall. This location is monitored on a quarterly basis to assess any potential breaches from the leachate pond. It is considered, based on the elevated nature of the landfill site, that groundwater would flow in a west to north westerly direction towards lower lying lands and the Kentucky Creek. Historical data of the three (3) wells since approximately 2001 supports that understanding.

Groundwater monitoring locations are shown on **Drawing 2, Appendix A**.

RCA's groundwater sampling methodology comprised:

- Monitoring of methane gas at each well by carefully removing the well cap and placing the gas monitor into the monitoring well. It is noted that this reading has been considered indicative only as there would likely be loss of volatile gasses, should these be present, once the cap was removed.
- Measurement of standing water level.
- Removal of at least one bore volume with a hand bailer prior to the commencement of water quality measurements by a calibrated water quality meter.
- Collection of samples into appropriately preserved sample containers following the stabilisation of pH and electrical conductivity readings. Samples to be analysed for dissolved metals were filtered in the field using syringes and 0.45 µm filters. Samples were placed into an insulated container on ice.

A photographic record of the water columns was taken in the field, and all samples were transferred to a NATA accredited laboratory for the required EPL (Ref [1]) parameters: refer **Section 7.2** for results.

Field sheets and calibration certificates for the monitoring period are attached in **Appendix B**.

6.2 SURFACE WATER MONITORING AND SAMPLING METHODOLOGY

The surface water monitoring programme is implemented to characterise the site surface water located near the western boundary, to detect if surface water is being contaminated with leachate or other wastewater and to determine if any potential offsite pollution is occurring.

Surface water quality at the site can be impacted by a number of variables including:

- Type of waste emplaced in landfill.
- Presence and location of historically contaminated soils.
- Contamination with leachate or other wastewater.
- Stockpile cover.
- Maintenance of vegetation.
- Rainfall events.

- Weed and pest control measures.
- Chemical, fuel and oil storage. Including environmental incidents.
- Sewage spills.
- Maintenance of the leachate pond and onsite roads.

The surface water monitoring network consists of US1 situated downgradient (west) of the leachate pond and two (2) offsite locations (US2 and US3) within the unnamed creek that is the tributary to Kentucky Creek. Surface water monitoring locations are shown on **Drawing 2, Appendix A**.

Surface water sampling of US1 was undertaken by submerging a clean unpreserved sampling container into the water body or syringing the water directly from the shallow flow and decanting into the appropriately preserved sampling receptacles. Field measurements (pH, electrical conductivity, salinity, dissolved oxygen, redox and temperature), sampling technique and sample appearance were recorded on the field sheets. A photographic record of the water column was taken in the field. All samples were transferred into suitably prepared laboratory supplied bottles and analysed by a NATA accredited laboratory for the required EPL (Ref [1]) parameters; refer **Section 7.3** for results.

Field sheets and calibration certificates for the monitoring period are attached in **Appendix B**.

6.3 LEACHATE MONITORING AND SAMPLING METHODOLOGY

USC implements a leachate monitoring programme to:

- Characterise the quality of leachate generated.
- Monitor evolution of the landfill leachate and composition with time.
- Compare key leachate indicator parameters with surface and groundwater monitoring results.

Leachate sampling was undertaken at one (1) location (UL1) on a biannual basis, **Drawing 2, Appendix A**, in conjunction with the surface water and groundwater sampling. Field measurements (pH, electrical conductivity, salinity, dissolved oxygen, redox and temperature), sampling technique and sample appearance were recorded on field sheets. Leachate samples were transferred into suitably prepared laboratory supplied bottles and analysed by a NATA accredited laboratory for the required EPL (Ref [1]) parameters. A photographic record of the water column was taken in the field.

Field sheets and calibration certificates for the monitoring period are attached in **Appendix B**.

6.4 LEACHATE POND OVERFLOW EVENTS

Leachate pond overflow events are required to be monitored from the onsite leachate pond. EPL2 is located at the spillway and is only sampled during a discharge event. Surface water monitoring points (US1, US2 and US3) are also sampled during discharge events. All water monitoring locations are shown on **Drawing 2, Appendix A**.

One (1) discharge event occurred within the 2024 – 2025 monitoring period on 4 August 2025; the overflow had ceased by 7 August 2025.

6.5 SURFACE GAS MONITORING AND SAMPLING METHODOLOGY

Surface gas monitoring is undertaken on a quarterly basis at the site to determine the effectiveness and integrity of landfill cover / capping material in containing landfill gas. Surface gas monitoring is undertaken in general accordance with the NSW EPA Solid Waste Landfill Guidelines (Ref [6]).

Surface gas monitoring was undertaken by collecting readings on an approximate 25 m grid across accessible areas of the landfill with intermediate or final cover using a calibrated Huberg *Laser One* gas analyser for methane; calibration certificates are included in **Appendix B**. Measurements were taken approximately five (5) centimetres above the surface of the capping in a general criss-cross pattern over the central area of the site. Depressions in cover material, surface fissures and areas of vegetative stress were also investigated as these were encountered in sections within the leachate application area. Monitoring is ideally undertaken on days of calm winds however monitoring did have to be undertaken in non-ideal conditions on occasion during the 2024–2025 reporting period due to logistical issues with availability of equipment and personnel. It is noted the Huberg *Laser One* gas analyser telescopic rod utilised during the sampling events has a suction cup attached around the sensor to reduce any potential impact of wind.

Where readings exceeded 500 ppm of methane in surface gas at a sampling point on the site additional readings were taken in the immediate vicinity of the hot spot in an attempt to delineate the extent of impact.

GPS locations were logged by the Huberg *Laser One* gas analyser in small intervals to allow tracking of the path during the 2024–2025 monitoring period and imported into RCA's GIS for inclusion on the drawings consistent with previous methodology.

Monitoring of the northern landfill cell methane vent (**Drawing 1, Appendix A**) was undertaken by placing the monitor inside the large PVC piped vent, at the ground level and at its top, situated approximately 2 m above the ground level.

6.6 ACCUMULATED GAS MONITORING AND SAMPLING METHODOLOGY

The site's accumulated gas monitoring programme is undertaken on a quarterly basis (Ref [1]) to assess the potential for methane gas accumulation in enclosed spaces near the landfill in accordance with the guidelines (Ref [6]). Landfill gas readings were undertaken within three (3) enclosed structures located within 250m of the landfilling area during the 2024–2025 monitoring period. The locations where accumulated gas surveys were undertaken during this period were:

- Onsite recycling and service building (AMP1).
- Open aired recycling sorting building (Community Recycling Centre).
- Large storage shipping container. The primary purpose of the container is for storage of computer parts and no personnel utilise the area on a regular basis. Entry to this container is dependent on there being volunteers present at the time of the monitoring and no monitoring was undertaken within the container in the reporting period.

The locations of the structures monitored for accumulated gas are shown on **Drawing 4, Appendix A**.

7 SUMMARY OF RESULTS

Analytical results from groundwater, surface water and leachate samples collected throughout the current reporting period are compared to the relevant criteria in **Appendix C**; field readings are also included. RCA utilised the specific heath, ecological, trade waste, irrigation, livestock criteria and trigger levels to allow comparison to identifiable environmental onsite and offsite risks and to ensure consistency to what has historically been utilised at the site. Results were also compared to historical data collected from previous rounds of monitoring as summarised below.

Laboratory report sheets for the monitoring period are provided in **Appendix D**.

Results for surface and accumulated gas monitoring for the current period have been compared with historical data collected from previous rounds of monitoring as summarised below.

The Horiba U-52 water quality meter used was calibrated prior to the commencement of the works (refer **Appendix B**) however, the pH electrode was replaced in January 2025 after the completion of monitoring due to malfunction. Accordingly, RCA does not consider the pH data from the January 2025 monitoring round to be valid for any sample and these have been excluded from consideration in the following sections.

7.1 GROUNDWATER LEVELS

Standing water level (SWL) measurements taken prior to sampling for each monitoring event and converted to relative datum are shown in **Figure 4** below.

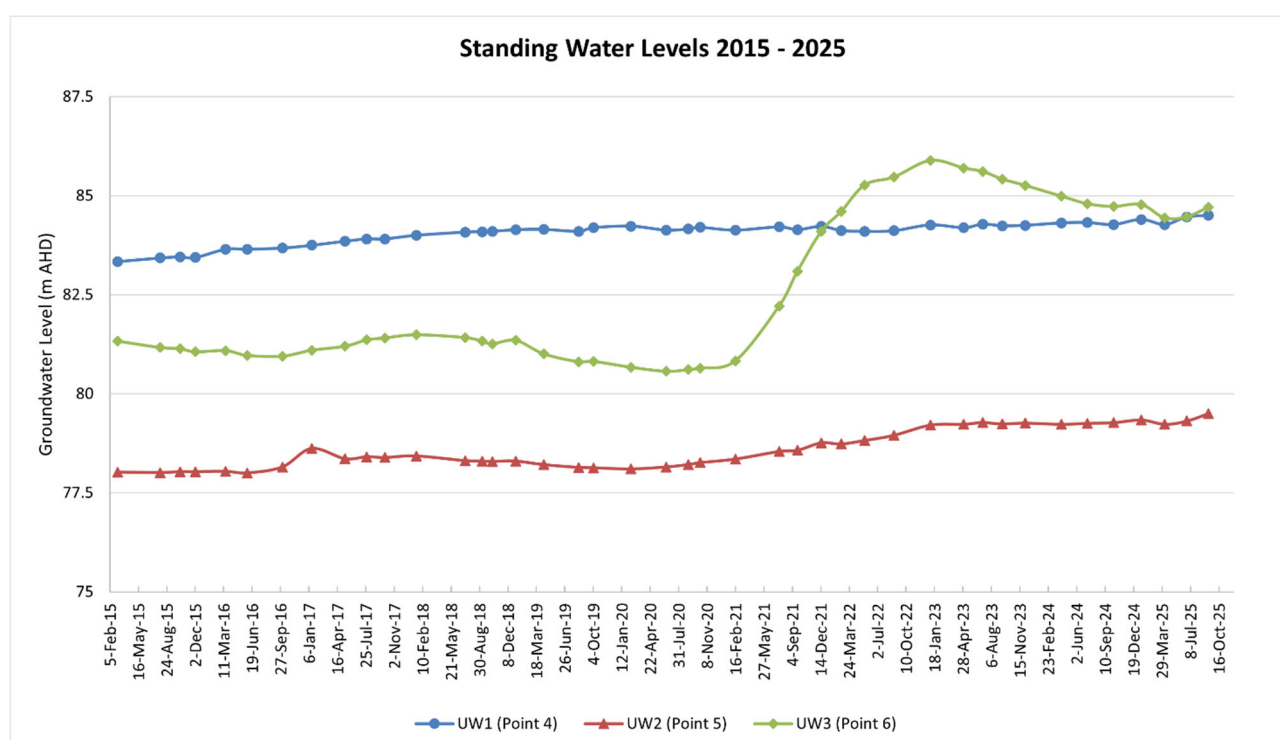


Figure 4 Groundwater Monitoring Bore Standing Water Levels

Groundwater levels at UW1 and UW2 increased slightly from 5 March 2015 to 5 January 2023 before stabilising. Groundwater levels at UW3 fluctuated slightly from 5 March 2015 to 16 February 2021, then rose to a peak of 85.89m on January 5, 2023, before beginning to decline. Since April 2025, groundwater levels across all monitoring wells have shown a general increase, with UW3 showing the most variation during the monitoring period.

7.2 GROUNDWATER MONITORING

Results of groundwater sample analysis indicate:

- The pH at the three (3) groundwater locations was slightly acidic to slightly alkaline during the majority of the reporting period.
 - Results were within the relevant guideline range (Ref [7]) Results at UW3 were below the lower point of the guideline range (Ref [7]) in all other events: April 2025 (6.37), June 2025 (6.24) and September 2025 (6.36).
 - All results were within the historical ranges.
- Electrical conductivity concentrations at the three (3) groundwater locations indicated brackish to saline conditions within groundwater across the site.
 - All reported electrical conductivity concentrations exceeded the relevant ecological guideline (Ref [7]) at all monitoring locations; however, remained within their respective historical ranges.
- Methane gas concentrations recorded at the three (3) groundwater locations were found to be below 5 ppm except at UW3 in April 2025 (6.8 ppm). The result is well below the criterion (Ref [6]) for enclosed spaces and within the historical range available to RCA.
- Redox potential at the three (3) groundwater locations was positive throughout the reporting period, with the exception of UW2 in January 2025 (-26). Recorded values were generally within their respective historical ranges, except in January 2025, when UW1, UW2, and UW3 all recorded their lowest values on record, and in June 2025, when UW1 and UW3 recorded their highest values within the historical range.
- The recorded temperatures at the three (3) groundwater locations varied from 13.74°C at UW2 in September 2025 to 20.88°C at UW1 in April 2025.
 - Recorded temperatures at the three (3) wells were within their respective historical ranges available to RCA with the exception of:
 - UW1 in April 2025 (20.88°C) was the highest recorded within the historical range.
 - UW2 in January 2025 (19.08°C) was the highest recorded within the historical range.

It is noted that there may be some impact on groundwater temperature from the average atmospheric temperature over a period of time.

- The field measurement of dissolved oxygen concentration at the three (3) groundwater locations varied from 0.79 mg/L (UW3) to 7.73 mg/L (UW1). All recorded concentrations, field and laboratory, were within their respective historical ranges.
- Total organic carbon concentrations at UW2 and UW3 were generally consistent throughout the reporting period and within their respective historical ranges.
- The free carbon dioxide concentrations at UW2 varied over the time period; the recorded amount in September 2025 was approximately ten (10) times greater than the amount recorded in April 2025. The concentrations also varied at UW3 from 22 mg/L in April 2025 to 454 mg/L in September 2025. All recorded concentrations were within their respective historical ranges.
- The total Kjeldahl nitrogen concentrations at UW2 and UW3 were consistent and within their respective historical ranges.

- Total oxidised nitrogen concentrations at UW2 and UW3 were over the ecological guideline (Ref [7]) with the results of UW3 also in excess of the long-term irrigation guideline (Ref [8]). The UW3 results were approximately one (1) to two (2) levels of magnitude higher than the UW2 results.
 - Recorded results were within their respective historical ranges, except for UW3 in September 2025, which was the lowest value in its range.
- Bicarbonate concentrations were generally consistent at UW2 and UW3, and similar between wells, however, higher concentrations were recorded at UW3 on average.
 - Recorded results were within their respective historical ranges, with the exception of UW3 in September 2025, which was the highest recorded within its historical range.
- Chloride concentrations were generally consistent at UW2 and UW3; where the UW3 results were higher than the UW2 results. The UW2 and UW3 results were within their respective historical ranges.
- Metals concentrations at UW2 were either not detected or were detected at low concentrations below the ecological and human health guidelines (Ref [7] and Ref [9]). Recorded results were within the historical ranges with the exception of manganese in September 2025, which was the lowest recorded within the historical range.
- Arsenic results at UW3 were consistent and in excess of the ecological value (Ref [7]) and the relevant human health guidelines (Ref [9]). Iron was not detected at UW3, and manganese was detected at low concentrations below the guidelines (Ref [7] and Ref [9]). Recorded results were within the historical ranges with the exception of manganese in September 2025, which was the highest recorded within the historical range.

7.3 SURFACE WATER MONITORING

Field readings at US1 were undertaken during four (4) monitoring rounds throughout the monitoring period, with samples collected during two (2) of those rounds (April 2025 and September 2025).

No flow, or only very minor flow, was observed at US1 during each of the four (4) monitoring rounds. Water was sampled from a slight trickle beneath the surface of the grass within the channel, with the use of the syringe.

Results of surface water sample analysis indicate:

- The pH at US1 was slightly alkaline across the monitoring period. The recorded result in June 2025 was in excess of the relevant guideline range (Ref [7]). All results were within the historical ranges.
- The electrical conductivity concentrations recorded exceeded the relevant ecological guideline (Ref [7]) in January 2025 and April 2025; however, were within the historical range.
- Redox potential was positive throughout the monitoring period except for the January 2025 monitoring event. Recorded results were within the historical range with the exception of June 2025 which was the highest recorded within the historical range.
- The recorded temperatures varied between 8.98°C (September 2025) and 30.29°C (January 2025); where the January 2025 result was the highest recorded within the historical range.
 - It is noted that there would be impact on surface water temperature due to air temperature at, and preceding, the time of sampling.
- The dissolved oxygen concentration ranged from 3.65 mg/L in January 2025 to 5.4 mg/L in June 2025; all results were within the historical range.

- The total suspended solids concentration varied by approximately 348% between the two (2) monitoring events; however, both results were within the historical range.
- The total organic carbon concentration was higher in April 2025; both results were within the historical range of results.
- The total Kjeldahl nitrogen concentrations varied slightly in the two (2) monitoring events; the September 2025 concentration was the lowest recorded within the historical range of results.
- The total oxidised nitrogen concentration exceeded the ecological guideline (Ref [7]) in September 2025; and was undetected in the April 2025 monitoring round. Both recorded results in the monitoring period were within the historical range of results.
- The total phosphorus concentrations exceeded the ecological guideline (Ref [7]) and the long-term irrigation guideline (Ref [8]) in both monitoring rounds; both results were within the historical range of results.
- Dissolved major cations varied across the two (2) monitoring events however remained within the historical range of results.
- The alkalinity concentrations recorded varied between the two (2) monitoring rounds. All concentrations were within the historical range of results with the exception of carbonate alkalinity in April 2025, which was the highest recorded within the range.
- The chloride concentrations recorded in April 2025 were more than double than in September 2025; both concentrations were within the historical range of results.
- The sulphate concentrations recorded in the two (2) monitoring rounds were within the historical range of results. RCA notes that the practical quantitation limit (PQL) was raised to 10 mg/L in the April 2025 monitoring round due to sample matrix.
- Iron concentrations exceeded the ecological and long-term irrigation guidelines (Ref [7] and Ref [8]) in the two (2) monitoring rounds; however, remained within the historical range of results.
- Manganese concentrations exceeded the ecological guideline (Ref [7]) in April 2025 and exceeded the long-term irrigation and human health guidelines (Ref [8] and Ref [9]) in the two (2) monitoring rounds. Both recorded concentrations were within the historical range of results.
- Chromium concentrations exceeded the ecological guideline (Ref [7]) in the three (3) monitoring rounds; noting that an additional sample was taken during the June 2025 monitoring round due to the detection of hexavalent chromium in the April 2025 monitoring round. This was the first time hexavalent chromium was detected since monitoring for this analyte commenced in July 2023. The detected concentration was twice the PQL and was considered to be a potential anomaly due to being close to the detection limit and unlikely to be significant. RCA notes that hexavalent chromium was not detected in the June 2025 monitoring round. All recorded concentrations were within the recorded historical range of results.
- Copper and zinc concentrations exceeded the ecological guideline (Ref [7]) in the two (2) monitoring rounds; however, remained within the historical range of results.
- Benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN) were not detected at US1 in the monitoring period; consistent with the historical data set and were therefore considered below the relevant human health guidelines (Ref [9]).

7.4 LEACHATE MONITORING

Field readings at UL1 were conducted during four (4) monitoring rounds throughout the monitoring period, with samples collected during two (2) of those rounds (April 2025 and September 2025).

Results of leachate sample analysis indicate:

- The pH of the leachate at UL1 was strongly alkaline to slightly alkaline throughout the monitoring period and exceeded the ecological guideline (Ref [7]) in April 2025. All results were within the historical range of results.
- The electrical conductivity concentrations recorded in the monitoring period exceeded the relevant ecological guideline (Ref [7]); however, remained within the historical range of results.
- Redox potential was negative in January 2025 and positive for the following rounds; June 2025 was the highest recorded value in the historical range.
- The recorded temperature in January 2025 was the highest recorded within the monitoring period and was the highest recorded within the historical range. The remaining results were within the historical range of results.
 - It is noted that there would be impact on surface water temperature due to air temperature at, and preceding, the time of sampling.
- The dissolved oxygen concentrations varied between 4.25 mg/L in September 2025 to 5.6 mg/L in July 2025; all recorded values were within the historical range of results.
- The total organic carbon concentrations were consistent in the two (2) monitoring rounds, and both were within the historical range of results.
- The total Kjeldahl nitrogen concentrations were generally consistent in both monitoring rounds and within the historical range of results.
- The total oxidised nitrogen concentrations were constant in both monitoring rounds; both were above the ecological guideline (Ref [7]) and within the historical range of results.
- The total phosphorus concentration in April 2025 was four (4) times higher than that in September 2025; both were above the ecological guideline (Ref [7]), and the April 2025 concentration was also above the long-term irrigation guideline (Ref [8]). The September 2025 concentration was the lowest recorded within the historical range.
- Total alkalinity concentrations were generally consistent in both monitoring rounds, and all results were within the historical range of results.
- The chloride concentrations were generally consistent in both monitoring rounds where the September 2025 result was the lowest recorded within the historical range of results.
- Chromium and iron concentrations exceeded the ecological guideline (Ref [7]) in both monitoring rounds.
 - Iron concentrations exceeded the long-term irrigation guideline (Ref [8]) in both monitoring rounds, while manganese exceeded the guideline in September 2025.
 - Manganese concentrations exceeded the human health guideline (Ref [9]) in the September 2025 monitoring round.
 - Metal concentrations were within the historical range of results with the exception of the September 2025 results for arsenic and chromium, which were the lowest recorded within the historical range.

- Pesticides were not detected and considered below the human health guidelines (Ref [9]), consistent with the historical range.

7.5 ADDITIONAL SAMPLES

Overflow of the leachate pond occurred on one (1) occasion during the monitoring period:

- 4 August 2025

Samples were collected at the overflow points (EPL2 and US1) and at the downstream locations (US2 and US3) on 4 August 2025.

Results are included in **Appendix C** and are compared to the relevant guidelines. Analysis, undertaken by USC and reported separately to the NSW EPA, indicates that the discharge has not had an observable impact on the receiving water (US3) quality.

7.6 WATER QUALITY ASSURANCE

A total of two (2) water duplicate samples, two (2) trip blanks and two (2) trip spikes were submitted blind to the laboratory for analysis with the biannual sampling rounds in April 2025 and September 2025, noting that no volatile analysis is undertaken in the January or June 2025 monitoring rounds and a total of ten (10) samples were submitted by RCA for analysis in the reporting period. Results are included in **Appendix D**.

RCA has reviewed the analytical results of these quality assurance samples as well as the laboratory's internal quality assurance and control (refer laboratory report sheets in **Appendix D**) in each of the quarterly reports and notes the following:

- The relative percentage difference (RPD) of the intralaboratory duplicate for arsenic in the April 2025 monitoring round at UL1 was 54.5%, and 67.4% for iron. The high RPD was due to an error by field personnel, where the duplicate sample container (QA) was incorrectly labelled as field filtered such that the duplicate sample was analysed for dissolved metals instead of total metals. The UL1 sample had the higher result and as such was used for the monitoring result.
- The RPD for hexavalent chromium was 83.5% at US1 during the April 2025 monitoring round. Hexavalent chromium was detected in April 2025 for the first time since monitoring for this analyte commenced in July 2023. The detected concentration (0.02 mg/L) was twice the PQL and was considered to be a potential anomaly due to being close to the detection limit and was considered unlikely to be significant. RCA undertook additional sampling for hexavalent chromium in the following monitoring round to ensure it was not representative of emerging contamination, and notes that hexavalent chromium was not detected during the June 2025 monitoring round.
- The laboratory control spike relating to the UL1 result in April 2025 for monocrotophos was not considered reliable as the recovery was 24.8%. This is considered to indicate uncertainty in the analysis however it is noted that no OPP was detected in the analysed sample and that there is no criterion for monocrotophos. Therefore, the uncertainty is not considered significant.

RCA therefore considers that the data obtained from this testing is accurate and reliable in as far as it can be ascertained.

7.7 SURFACE AND ACCUMULATED GAS MONITORING

Wind readings were collected onsite during monitoring in addition to consideration of the data provided by the nearest capable BOM station. In general, there were occasions when the wind speed was greater than the recommended 10 km/hr (Ref [6]) value. The methodology for monitoring minimises the potential for wind impact to the surface methane results based on the height above ground level and the protective cup around the probe such that, when the probe is touched to the ground as it was during monitoring, it is protected from wind influence. As such, it is considered that the readings are generally representative of the methane gas emissions at the site.

Atmospheric pressure readings, recorded from the nearest capable BOM station, were generally marginally above the preferable range of less than 101.3 kPa and stable (Ref [6]), except for the January 2025 event, which was within the preferred range. There were logistical restrictions to the days of fieldwork associated with equipment hire and personnel establishment to site such that alternative monitoring was not undertaken due to higher than preferred pressure. The discrepancy between the actual pressure and the preferable pressure was not considered significant such that the readings are considered generally representative of the methane gas emissions at the site.

Results higher than the 500 ppm NSW EPA criterion (Ref [6]) for surface gas identified during the 2024–2025 reporting period are presented **Table 4** below and **Drawing 3, Appendix A**.

Table 4 Concentration Recorded Above 500ppm

Grid Reference of location	Monitored	Description	Peak Methane reading (ppm)
H3	April 2025	Northwest face - gravel	556
		North face on top of stockpile	7,800
		North face past star picket	12,000
	June 2025	Grassed area, northwest of active tipping face	2,500
		Grassed area, west of active tipping face	2,000
	September 2025	North face – closer to Northwest corner	4,200
		North face -- Northwest corner	3,400
H4	April 2025	West face	7,600
	June 2025	Grassed area, west of the active tipping face, near drain	800
	September 2025	Grassed area, west of the active tipping face, near drain	800
		Western face	1,500
H5	January 2025	Cleared area with small stockpile, south southwest of the active tipping area.	3,200
	April 2025	Southwest of tipping area	3,300
		Southwest – 3 m northwest of stockpile	41,000
	June 2025	Grassed area near the stockpile at the end of the western face	1,800
I3	January 2025	Grassed area, north of active tipping area.	1,800
		Grassed area, northwest of active tipping area.	1,350
	April 2025	North face – grass/gravel area	1,250

Grid Reference of location	Monitored	Description	Peak Methane reading (ppm)
I3 cont.	April 2025 cont.	North face – gravel area	556
		North face – grass/gravel area near stockpile	1,250
I3 cont.	June 2025	Grassed area, west of the active tipping face	2,000
I5	April 2025	Southwest of tipping area next to drain	2,515
	September 2025	Southwest corner – near small stockpile	14,000
J3	April 2025	North face – along work fence northwest of stockpile	780
		North face – grassed area	2,070
		North face – grassed area	1,260
		North face – grassed area	4,040
	June 2025	Grassed area, north of the active tipping area	2,300
		Grassed area, north of the active tipping area	1,800
	September 2025	North face – grassed area	1,400
		North face – grassed area	1,400
		North face – grassed area	980
J5	April 2025	Irrigation area	520
O4	April 2025	Near shipping container	570

Most of the areas with elevated surface methane are to the north, northwest, west and southwest of the active tipping area. The area to the north and northwest of the active tipping area routinely has readings above background, generally in the order of 25 - 100ppm and / or 100 – 500 ppm however multiple readings >500 ppm were detected over the monitoring period and eleven (11) readings >2,500 ppm were detected in January 2025, April 2025 and September 2025. These have been reported in each of the associated monitoring reports and the details in relation to the detected methane levels have been extracted into **Figure 5** below.

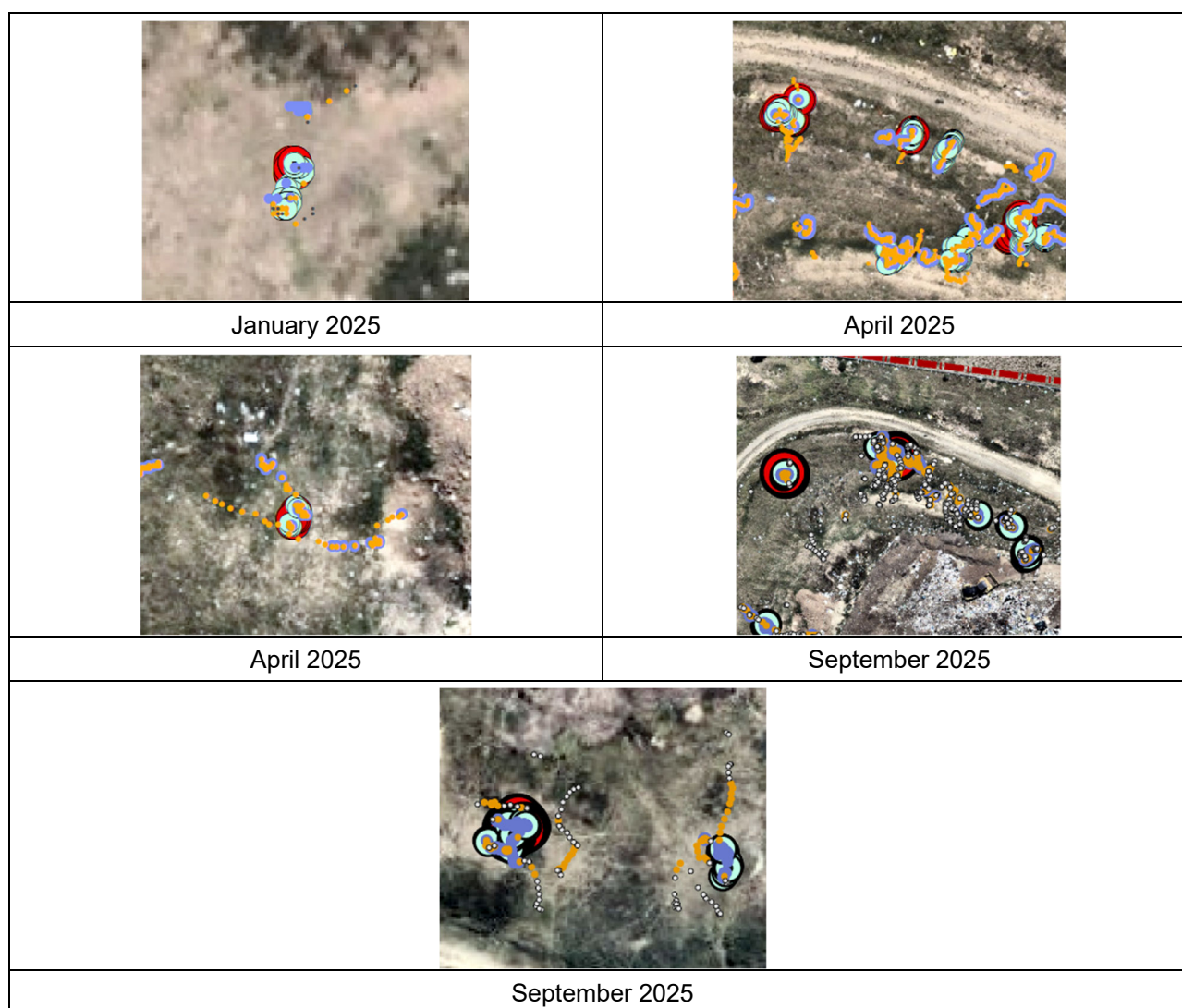


Figure 5 *Repeated Above Background Concentrations North, Northwest, West and South of Active Tipping Area* (noting grey represents 10-25 ppm, orange represents 25-100 ppm, purple represents 100-500 ppm, light blue represents >500 ppm and red represents >2500 ppm)

An area near the *Drum Muster* collection point which had indicated repeat elevated concentrations in the previous reporting period did not exhibit concentrations above background ambient levels in this reporting period.

Methane concentrations at the northern vent generally exceeded the acceptance criterion of 500 ppm throughout the monitoring period. Readings from January, April, and June 2025 were below the threshold for methane in enclosed spaces (10,000 ppm) and did not exceed the lower explosive limit (LEL, 50,000ppm). The highest recorded concentration occurred during the September monitoring round (11,000 ppm), which exceeded the threshold for methane in enclosed spaces but remained well below the LEL.

There were no methane concentrations that exceeded the 1% (volume/volume) or 10,000 ppm NSW EPA criterion (Ref [6]) for enclosed structures identified within any of the structures at the site during the reporting period, refer **Drawing 4, Appendix A**. It is noted that readings regarding the shipping container, which is used for storage and only occasionally accessed by personnel, were not undertaken due to lack of access during the monitoring period. Readings from around the outside of the container did not exceed 5 ppm during the monitoring period, with the exception of one (1) reading (570 ppm) in the April 2025 monitoring round.

RCA identified some minor erosion (<0.3m) within the northwestern portion of the site identified on **Drawing 3, Appendix A** consistent with the previous 2023–2024 monitoring period, noting that the area appeared generally stable and revegetated in parts during the monitoring period. Gas readings taken within the erosion were comparable with the remainder of the covered landfill areas; elevated readings to the north of the active landfilling did not necessarily correlate with eroded / bare earth areas. No noticeable leachate seepages were observed across the landfill during the monitoring rounds.

8 CONCLUSION AND DISCUSSION

This report has presented the findings of water, leachate and gas monitoring undertaken at the Uralla Landfill located on Rowan Avenue, Uralla during the annual 2024–2025 reporting period.

Two (2) rounds of biannual monitoring (April and September 2025) and two (2) rounds of quarterly monitoring (January and June 2025) were undertaken within the current reporting period in compliance with the requirements of the site's EPL (Ref [1]).

The current analytical programme undertaken during the reporting period was generally conducted in accordance with the site EPL (Ref [1]) and recommended methodologies (Ref [6]). Sampling of off-site locations US2 and US3 and on-site spillway location (EPL2) was undertaken by USC site personnel during the discharge event on 4 August 2025. The water level in the leachate pond (UL1) was at approximately 0.8 m, with reference to the volume indicator sign located near the discharge point, during the September 2025 monitoring round.

Rainfall data obtained from the Uralla BOM station (056034) recorded a total of 909 mm of rain during the 2024–2025 reporting period, which was higher than the previous reporting period and the historical average. Approximately 81% of the annual rainfall fell within four distinct (4) periods (November 2024, January 2025, March 2025 to May 2025 and July 2025 to August 2025), where the monthly rainfall exceeded the monthly average seven (7) times within the period. The largest amount of rainfall was received in March 2025. There were seven (7) large rainfall events recorded throughout the reporting period (>25 mm within a 24hr period) which contributed approximately 25% of the annual rainfall.

The total pan evaporation for the 2024–2025 reporting period was 1074 mm and was largely found to be greater than the total monthly rainfall events recorded throughout the year except for the period from March 2025 to May 2025 and July 2025 to August 2025. Council's reconstruction of the leachate irrigation network in mid-2022, which included the installation of additional sprinklers on higher riser pipes to enhance leachate evaporation, appears to have been effective, with only one discharge event recorded during the monitoring period despite increased rainfall; the discharge event was related to the melting of ~400 mm of snow and not considered a typical event. Council has further desilted the leachate dam and expanded the dam perimeter to increase holding capacity. Pumping of leachate (irrigation) is still ongoing.

The maximum monthly temperatures during the 2024–2025 reporting period were generally higher than the historical monthly averages, whereas the minimum temperatures were generally less than the historical monthly averages.

Standing water levels at groundwater wells UW1 and UW2 have shown a gradual increase since monitoring commenced in 2015, with UW3 exhibiting the greatest variation (~3.4 m) over this period. During the 2024-2025 monitoring period, all three wells (UW1, UW2 and UW3) recorded a slight increase in standing water levels since the April monitoring round, and none of the chemical results were considered to indicate signs of leachate impact.

Sampling of surface water point US1 was undertaken during each monitoring event; however, flow was either absent or minimal, requiring samples to be collected by syringing shallow surface water and decanting into appropriately preserved containers. Metals concentrations during the 2024–2025 reporting period were generally higher than those recorded in the previous reporting period (2023–2024), while total nitrogen concentrations were lower. No clear correlation was observed between the surface water results and the leachate (UL1) sample data.

The field readings and laboratory results of the leachate (UL1) appear to be consistent with the historical range of results collected at this location. Pesticides and VOC were not detected in the monitoring period, consistent with the historical range of results.

Surface methane was detected above the relevant thresholds (Ref [6]) during the reporting period, primarily in proximity to the active landfilling area and the northern vent. The area along the northern and western face of the active tipping area is considered to represent a continual source of methane as it is consistently indicating higher than background levels although not >500 ppm except in localised positions. RCA notes that due to the localised extent of elevated gas readings identified during the monitoring period and the variable nature of the surveys' traverse route, there may be some methane emissions that were not picked up even with deliberate attempt to find previously detected areas of concern.

Significant concentrations of methane, detected at the northern vent, were greater than the acceptance criterion (>500ppm) except for January 2025. Readings for April and June 2025 remained below the 10,000ppm threshold for enclosed spaces and the lower explosive limit (LEL, 50,000ppm). The highest recorded concentration occurred during the September 2025 monitoring round (11,000 ppm), which exceeded the threshold for methane in enclosed spaces but remained well below the LEL.

The levels of methane varied throughout the reporting period; however, the cause of the variation is uncertain and may be associated with variations in soil cover and thickness overlaying waste materials, the presence of undetectable surface cracks or fissures, fluctuations in subsurface conditions or leachate levels, atmospheric conditions or combination of these factors.

No methane was detected within any of the buildings at the site above the relevant thresholds (Ref [6]) during the reporting period, and RCA do not consider the current gas concentrations to pose a risk to personnel working at the site. RCA has previously recommended that air exchange be undertaken prior to entry into the shipping container, as it is infrequently accessed and may allow methane to accumulate.

Based on the majority of results and comparison of these results to historical data collected at the site, RCA does not consider that any specific environmental response actions are needed. RCA also considers that monitoring undertaken within the current reporting period has been done in general compliance with Section B2 of the site EPL (Ref [1]) and has demonstrated that all monitoring results were evaluated correctly. RCA notes that nutrient concentrations (total nitrogen and NO_x) remain the best indicator of potential leachate impact on groundwater and surface water at the site however recommend Council consider adding ammonia, BOD, COD and per-and polyfluoroalkyl substances to the analysis suites for future landfill sampling events. These contaminants are considered appropriate indicators for leachate contamination within surface water and groundwater and will provide a more detailed interpretation of the obtained results.

9 LIMITATIONS

This report has been prepared for Uralla Shire Council in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Uralla Shire Council. The report may not contain sufficient information for purposes of other uses or for parties other than Uralla Shire Council. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA



Stephen Hendriksen
Environmental Engineer
BEng (Env)

REFERENCES

- [1] NSW EPA, *Environment Protection Licence No. 5899, 30 July 2002*, Licence Version Dated 30 June 2021.
- [2] <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/lot/33TipRoadUralla2358>
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- [4] Uralla Shire Council, *2024-20245 Annual Local Government Waste and Resource Recovery (WaRR) Data Survey*, submitted on 28 November 2025.
- [5] Uralla Shire Council, *Pollution Incident Response Management Plan (PIRMP), Uralla Landfill and Recycling Facility*. Rev 3.0 30 November 2020.
- [6] EPL NSW EPA, *Environmental Guidelines – Solid Waste Landfills*, Second Edition 2016.
- [7] ANZG, Australian and New Zealand Guidelines for Fresh and Marine Water Quality Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia., August 2018. Available at www.waterquality.gov.au/anz-guidelines.
- [8] ANZECC, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, October 2000.

- [9] National Health and Medical Research Council, *Australian Drinking Water Guidelines*, 2011.

GLOSSARY

AER	Annual Environment Report
AHD	Australian height datum, based on a mean sea level.
ANZECC	Australian and New Zealand Environmental Conservation Council.
ANZG	Australian and New Zealand Guidelines for the Fresh and Marine Water Quality.
DPIE	Department of Planning, Industry and Environment.
EPL	Environment Protection Licence
ESL	Ecological screening level. Relates to vapour risk from petroleum hydrocarbons which may pose a risk to ecological health.
HIL	Health investigation level. Relates to soil concentrations which may pose a risk to human health in soil.
Interlaboratory	A sample sent to two different laboratories for comparative analysis.
Intralaboratory	A sample split into two and sent blind to the sample laboratory for comparative analysis.
Leachate	Fluid that has passed through a soil stratum, possibly collects contaminants.
LEP	Local environment plan. A planning tool for the Local Government.
NHMRC	National Health and Medical Research Council.
NSW EPA	NSW Environment Protection Authority – formerly a component of DECC, DECCW, OEH but made a separate entity in 2011 to regulates the contaminated land industry.
PQL	Practical Quantitation Limit.
QA	Quality Assurance.
QC	Quality Control.
RPD	Relative Percentage Difference.

Chemical Compounds

BOD	Biochemical oxygen demand, the requirement for molecular oxygen by microbes during oxidation of biological substances in sewage. The BOD test measures the oxygen consumed (in mg/L) over five days at 20°C.
BTEX	Benzene, toluene, ethylbenzene, xylene.
COD	Chemical oxygen demand, the amount of oxygen (in mg/L) to oxidise both organic and oxidisable inorganic compounds.
OCP	Organochlorin pesticides.
TDS	Total dissolved solids. Also known as non filterable residue (NFR).
TSS	Total suspended solids.

Appendix A

Drawings



LEGEND

- Approximate site boundary
- Approximate leachate irrigation area
- Northern vent

Note:
Aerial image taken from Nearmap, 16 February 2025
(used in accordance with commercial licence)

0 15 30 60 90 120

metres

N

GEOTECHNICAL • ENVIRONMENTAL

SITE LOCALITY AND LAYOUT PLAN
ANNUAL ENVIRONMENTAL REPORT
2024-2025
URALLA LANDFILL, URALLA

CLIENT	Uralla Shire Council	RCA Ref	15579a-415/0
DRAWN BY	SH	SCALE	1:2,500 (A3)
APPROVED BY	FB	DATE	27/10/2025
		DRAWING No	1
		REV	0
		OFFICE	NEWCASTLE



LEGEND

Approximate site boundary

Approximate groundwater monitoring location

Approximate surface water location

Approximate leachate monitoring location

Approximate leachate overflow monitoring location

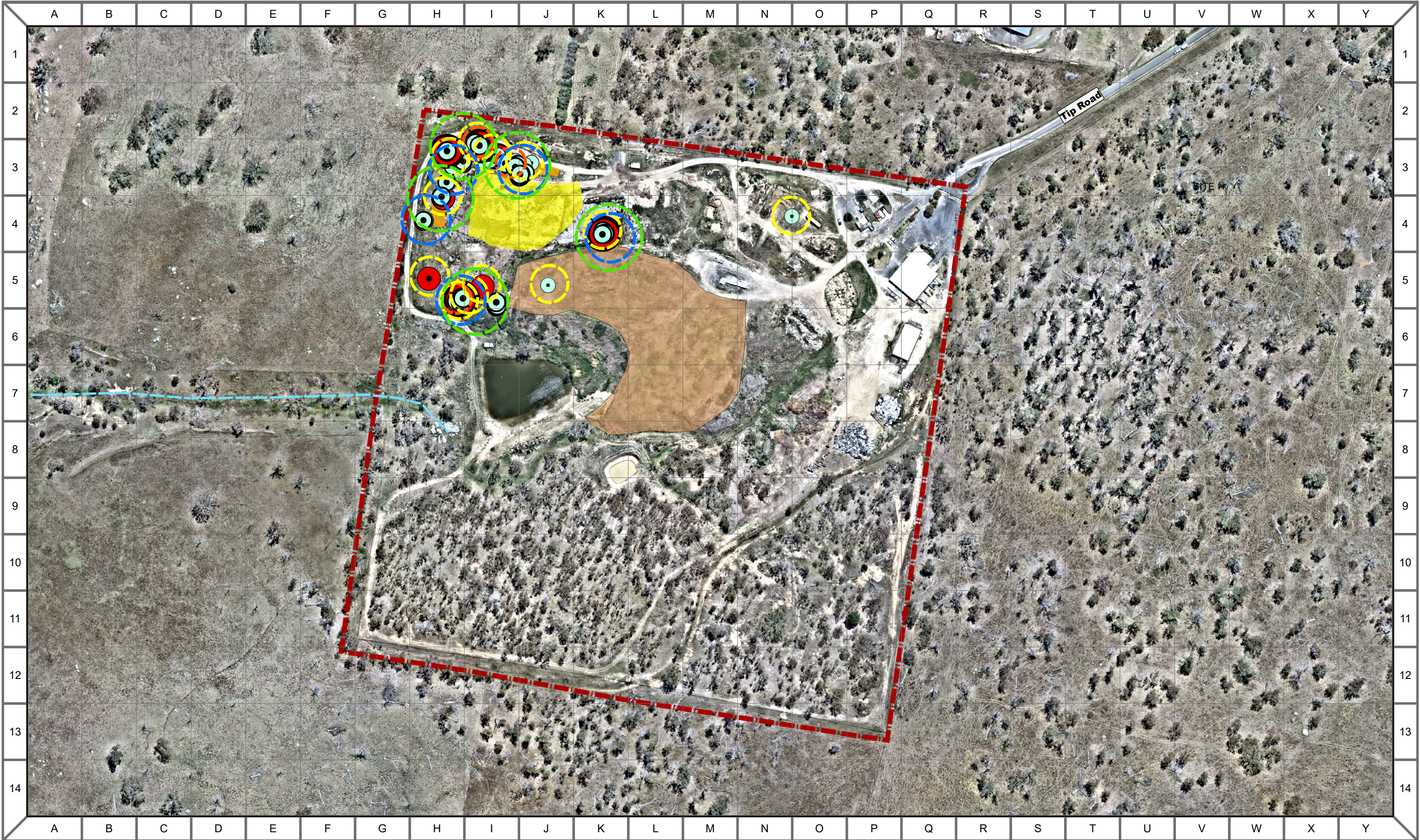
Watercourse

Note:
Aerial image taken from Nearmap, 16 February 2025
(used in accordance with commercial licence)

GEOTECHNICAL • ENVIRONMENTAL

CLIENT		Uralla Shire Council		RCA Ref		15579a-415/0			
DRAWN BY		SH		SCALE		1:2,500 (A3)			
APPROVED BY		FB		DATE		27/10/2025			
DRAWING No				2		REV		0	
OFFICE				NEWCASTLE					

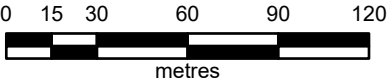
**WATER MONITORING LOCATIONS
ANNUAL ENVIRONMENTAL REPORT
2024-2025
URALLA LANDFILL, URALLA**



LEGEND

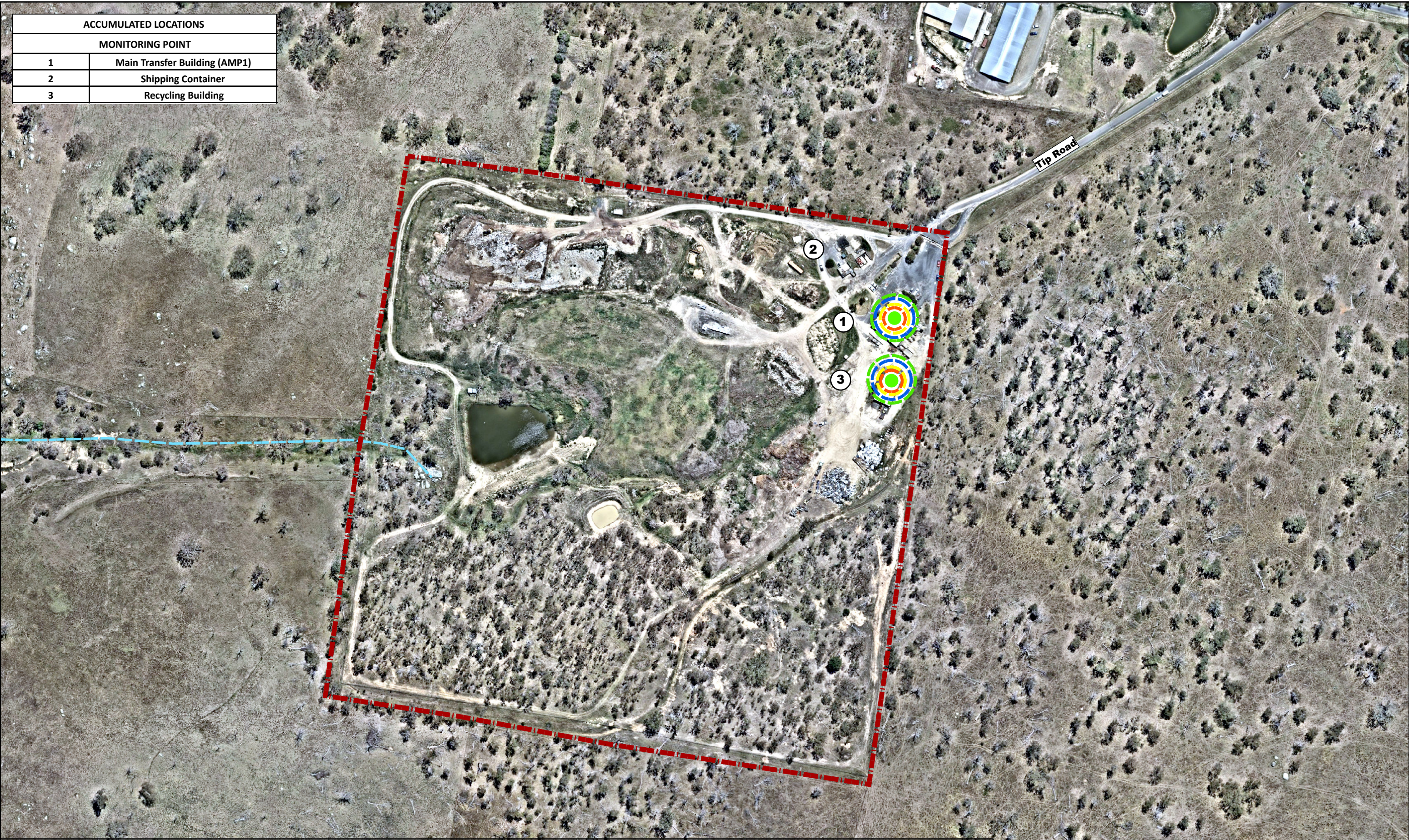
- Approximate site boundary
- Northern vent
- Methane concentration in parts per million (ppm)
- > 500ppm over EPA guideline
- > 2500ppm over EPA guideline
- Approximate area of active tipping
- Approximate leachate irrigation area
- Approximate erosion location
- January 2025
- April 2025
- June 2025
- September 2025

Note:
Aerial image taken from Nearmap, 16 February 2025
(used in accordance with commercial licence)
Grid ~40m x~40m



SURFACE GAS SURVEY ANNUAL
ENVIRONMENTAL REPORT
2024-2025
URALLA LANDFILL, URALLA

CLIENT		Uralla Shire Council		RCA Ref		15579a-415/0				
DRAWN BY		SH	SCALE		1:2,500 (A3)		DRAWING No	3	REV	0
APPROVED BY		FB	DATE		27/10/2025		OFFICE NEWCASTLE			



LEGEND

Approximate site boundary

Methane within normal background (<5ppm)

Methane above normal background

January 2025

April 2025

June 2025

September 2025

Aerial image taken from Nearmap, 16 February 2025
(used in accordance with commercial licence)

015306090120

metres

GEOTECHNICAL • ENVIRONMENTAL

CLIENT		Uralla Shire Council		RCA Ref		15579a-415/0	
DRAWN BY		SH		SCALE		1:2,500 (A3)	
APPROVED BY		FB		DATE		27/10/2025	
DRAWING No				4		REV	
OFFICE				NEWCASTLE		0	

ACCUMULATED GAS MONITORING
ANNUAL ENVIRONMENTAL
MONITORING REPORT
2024 2025
URALLA LANDFILL, URALLA

Appendix B

Field Sheets and Calibration Certificates

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 16/1		Time: 9.20	
Sampler (s):		Bore ID: UW1			
Bore depth (m): 30.45		Depth to aquifer (m): 18.84 18.71 18.92		Height above ground level (m): 0.76	
Sample method: Bailer		Sample time: 9.35		Methane reading (ppm): 0.00	
Sample appearance / additional comments: Clear (Syngas photo)					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☐ TOP OF CASING (TOC)		☐ NO		☐ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
10L	18.28	9.51	6	1.62	10.5	2.99	0.081		1.03

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 15/1/25		Time: 2.50 - 3.30	
Sampler (s):		Bore ID: UW2			
Bore depth (m): 12.90		Depth to aquifer (m): 8.52 IBV = 34L.		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 3.30		Methane reading (ppm): 0.1 above background	
Sample appearance / additional comments: Clear to slightly cloudy no odour.					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☒ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
34L	19.08	9.97	-26	1.79	208	2.42	0.071	8.78	

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 16/1		Time: 7.40am	
Sampler (s): Fura B		Bore ID: UW3			
Bore depth (m): 21.64		Depth to aquifer (m): 5.90 5.85 130=1242		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 9.05		Methane reading (ppm): 0.2 Relative	
Sample appearance / additional comments: Clear, no odor, some bubbles					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☐ TOP OF CASING (TOC)		☐ NO		☐ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
124	17.51	9.20	27	3.09	6.7	1.28	0.161		1.98705
+ 3	17.25	9.20	23	3.16	3.2	1.16	0.164		2.02
+ 3	17.24	9.16	20	3.13	1.6	0.79	0.163	6.22	2.00

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 15/1/25	
Time: 2.25 - 3.00		Surface Water Location ID: US1	
Sampler (s): FB		Sample method: Direct	
Weather: Hot, sunny with some clouds + storm to south.			
Sample appearance:			
Additional comments: No water flow observed. Field readings from backfill of a depression			
Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ NO		☒ NO

FIELD MEASUREMENTS

TEMP (C)	30.29
pH	10.79
ORP (mV)	286 -111
COND (mS/cm)	1.89
DO (mg/L)	3.65
Salinity (%)	0.096
Turbidity	202
Total Dissolved Solids	1.21

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 15/1/25	
Time: 3.40		Surface Water Location ID: UL1	
Sampler (s): From B		Sample method: Direct	
Weather: Sunny / Thunderstorm - isolated drops			
Sample appearance:			
Additional comments: Dams low however higher than last time			
Duplicate sample collected:	☐ YES - Sample ID: ☒ NO	Laboratory analysis:	☐ YES - Lab No: ☒ NO

FIELD MEASUREMENTS

TEMP (C)	28.35
pH	11.48
ORP (mV)	-51
COND (mS/cm)	1.53
DO (mg/L)	5.25
Salinity (%)	0.076
Turbidity	150
Total Dissolved Solids	0.977

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

URALLA LANDFILL

SURFACE GAS MONITORING FIELD SHEET

Date: 15/1/25	Time: 1200	Page
Sampler: Fiona B	Temperature (° C): 31 on Anemometer	
Wind Speed (m/s): 2.0	Wind Direction (bearing) North North West	
Other observations: Armidale Airport @ 11.30 Temp 27 Pressure QNH 1010.4 WS 26 km/hr. MSL 1004.1 WD WNW No rain since 9		

MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
Vert	12.05	~1000		At top
	12.22	~650		At base
Wind gusting 4.2 m/s WNW				
Had to restart along northern b'dry because monitor memory was full.				
Northern Face	12.30	~1800	Crossed	Photo taken
		~180	Dirt - 3m west of above	
North West	12.45	~1350		In grass @ corner where star pickets
+ 2.5m west		~500		photo
West Face	12.55	~350	Dirt	6 fence panels north of gate
		~412		
"	1.00	412	Crossed	5 panels south of gate
NW corner	11.10	~1100	West of slope	About 20ppm at 80m

Date:	Page
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CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Environmental conditions during calibration

Temp.	23.1	C
Pressure	982.2	mBar

Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	6970767Y	5/10/2029	Synthetic Air
3 ppm	4405001	02/29/2027	CH4
10 ppm	4225861	9/30/2025	CH4
100ppm	CC109096	12/1/2028	CH4
1000 ppm	CC64714	9/27/2028	CH4
1.0% Vol	CC122022	11/15/2028	CH4
2.2% vol	CC81557	9/29/2028	CH4
5.0% vol	TT44360	9/11/2028	CH4
15% vol	481840	6/12/2029	CH4
50% vol	CC708175	1/22/2029	CH4
100% vol	1347010	11/11/2027	CH4

Calibration results: Pass

Next scheduled calibration: 6/24/2025

Calibration date: 6/24/2024

Issued by: Sarah Schafer

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Calibration certificate number **24RA-60223**
Instrument **Laser One** Serial Number **41039**

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Gas verification from **0-1000ppm CH4**

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	0.0	0	0	0	0.00	0.00	0.00	0.00
1000	3.02	3.3	3.3	3.3	3.10	0.28	0.03	0.03
1000	11	11.3	11.3	11.3	11.30	0.30	0.03	0.03
1000	102.0	99.5	99.5	99.5	99.50	2.50	0.25	0.25
1000	1006	1000	1000	1000	1000.00	6.00	0.60	0.60

Uncertainty	0.60	%
Max % error	0.60	% FS

Gas verification from **0-100% vol CH4**

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.17	2.10	2.10	2.10	2.10	0.07	0.07	0.07
100.00	5.00	5.10	5.10	5.10	5.10	0.10	0.10	0.10
100.00	15.00	15.00	15.00	15.00	15.00	0.00	0.00	0.00
100.00	50.00	50.10	50.10	50.10	50.10	0.10	0.10	0.10
100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00

Uncertainty	0.10	%
Max % error	0.10	% FS

Gas verification from **0-100% CH4 LEL (0-4.4% VOL)**

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.17	2.10	2.10	2.10	2.10	0.07	0.07	0.07
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Uncertainty	0.07	%
Max % error	0.07	% FS

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

SERVICE & CALIBRATION REPORT

Water Quality Meter

Customer Details:

RCA
92 Hill Street
Carrington
Attn: Kenny Yan

Job Number

240944

Date

30/09/2024

Instrument Model:

HORIBA U-52/10m 
Multi-Parameter Water Quality Meter

Instrument Serial Number:

1PH7HSWB 2019

Fault Report

Requires service/calibration.

Repairs Carried Out

Replaced DO membrane. Refilled pH reference electrode.
Cleaned all sensors. Re-calibrated all sensors as follows:

Calibration (in accordance with manufacturer's specifications):

Parameter - unit	Before Calibration	Calibration Value	After calibration	Comment
pH (pH)	7.25	7.01	7.01	Pass
pH (pH)	3.99	4.00	4.00	Pass
ORP (mV)	227	225	225	Pass
Conductivity (mS/cm)	0.000	0.000	0.000	Pass
Conductivity (mS/cm)	0.727	0.718	0.718	Pass
Conductivity (mS/cm)	6.74	6.67	6.67	Pass
Conductivity (mS/cm)	59.1	58.6	58.6	Pass
Turbidity (NTU)	0.0	0.0	0.0	Pass
Turbidity (NTU)	2.1	8.0	8.0	Pass
Turbidity (NTU)	82.7	80.0	80.0	Pass
Turbidity (NTU)	455	400	400	Pass
D.O. zero (mg/L)	0.00	0.00	0.00	Pass
D.O. zero (mg/L)	10.14mg/L @ 21°C	9.12mg/L @21°C	9.12mg/L @21°C	Pass
Temperature (°C)	20.01°C	19.8°C	19.8°C	Pass

Sensors:

pH Glass Electrode	pH Ref Electrode	ORP Electrode	DO Electrode
345078	WGTAD2NV	NH00S3C6	X3H6CF5A

Comments:

MAKE SURE the pH reference electrode is refilled with soln #330 regularly. If the #330 soln solidifies inside the pH reference electrode, remove the liquid junction cap (flat black rubber cap with wick in the middle) and rinse out the old solution with distilled water. Then refill with fresh HORIBA soln # 330 and refit the liquid junction cap. Please read the notes on pH maintenance.

Calibration carried out by:

Tony Fincher

AUSTRALIAN SCIENTIFIC PTY LTD

11 McDougall Street, Kotara, NSW, 2289

TEL: 1800 021 083

E-mail: sales@austscientific.com.au

www.austscientific.com.au

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 9/4/25		Time: 4.02	
Sampler (s): FB		Bore ID: UW1			
Bore depth (m): 30.45		Depth to aquifer (m): 18.835		Height above ground level (m): 0.76	
Sample method: Bailer		Sample time: 4.50		Methane reading (ppm): 0.0ppm	
Sample appearance / additional comments: Initially clear, became slightly cloudy					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☒ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
30L	20.88	6.69	245	1.49	278	3.23	0.075		

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 10/4/25		Time: 7:25	
Sampler (s): FB		Bore ID: UW2			
Bore depth (m): 12.90		Depth to aquifer (m): 8.55 8.625 32		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 8:30		Methane reading (ppm): 0-0.1 ppm	
Sample appearance / additional comments: Initially clear, became slightly cloudy					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☒ YES - Sample ID: UW2	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☐ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)		Comment
33L	15.21	7.08	267	1.81	261	3.27	0.091			1.16 TDS
+3L	15.57	7.07	268	1.83	209	2.80	0.092			1.19
+3L	15.72	7.06	264	1.82	149	2.47	0.092	8.86		1.16

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 10/4/25		Time: 9.45	
Sampler (s): FB		Bore ID: UW3			
Bore depth (m): 21.04		Depth to aquifer (m): 5.90 6.19 121		Height above ground level (m): 0.03	
Sample method: Bailer		Sample time:		Methane reading (ppm): 6.8 ppm	
Sample appearance / additional comments: Anti rest on top of cap - strong acid below					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☒ YES - Sample ID: UW3	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☐ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
121	19.12	6.44	217	3.02	2.9	1.86	0.159		TDS 1.95
+3	17.77	6.38	225	3.10	0.8	0.77	0.161		
+3	17.67	6.37	230	3.10	1.4	0.91	0.161	6.49	TDS 1.98

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 10/4/25	
Time:		Surface Water Location ID: US1	
Sampler (s): FB		Sample method: Direct	
Weather: Sunny			
Sample appearance:			
Additional comments: Very slow leak. Sample collected by syringe			
Duplicate sample collected:	☒ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No:
	☐ NO		☐ NO

FIELD MEASUREMENTS

TEMP (C)	13.77
pH	7.77
ORP (mV)	75
COND (mS/cm)	1.56
DO (mg/L)	4.02
Salinity (%)	0.996 0.078
Turbidity	172
Total Dissolved Solids	0.996

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 10/4/25	
Time: 9.15		Surface Water Location ID:	
Sampler (s): 9.40		Sample method: Direct	
Weather: Sunny, almost still			
Sample appearance:			
Additional comments: Pond low water < 0 on the marker			
Duplicate sample collected:	☒ YES - Sample ID: 44	Laboratory analysis:	☒ YES - Lab No: QA
	☐ NO		☐ NO

FIELD MEASUREMENTS

TEMP (C)	20.47
pH	8.25
ORP (mV)	150
COND (mS/cm)	1.34
DO (mg/L)	4.57
Salinity (%)	0.066
Turbidity	53.9
Total Dissolved Solids	0.848

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

URALLA LANDFILL

SURFACE GAS MONITORING FIELD SHEET

Date: 9/4/25	Time: 12:00	Page
Sampler: FB	Temperature (° C):	
Wind Speed (m/s): 0.8	Wind Direction (bearing) NNW.	
Other observations: Site sunny with some cloud cover Arrived at BOM @ 11:30 17.3°C 1025.8hPa GNM 58% RH 1022.7hPa MSL SE @ 9km/hr Onn rain since 9 (0 @ 9am)		

MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
	11:10	- monitor says		10:23. 93% battery 63% memory
Base of vent		~8000		
Top of vent		~1700		
Letting on	ambient readings of	~10ppm		odour
	north face of landfill			
Wind	turned southerly			up to 4.5m/s
North Face		~580		High with force notice west of sp.
4m SW		~780		
North Face		~2070		Grass
North Face		~1260		Gravel patch
2m west		~4640		Same gravel patch
~155	another 2m west			Same gravel patch
~80m	2m <u>se</u> north of			Different gravel patch

photo
photo
photo
photo
photo

Date:	Page
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MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS	
North Face		~1250		Gravel / grass	photo
West ~ 2m		~556		Gravel	photo
North Face ~ 6m north of ↑		~1250		Gravel Grass near Stockpile	photo
West by 2m		~3000		Crossed stockpile	photo
North west Face just past star		~4835	picket	Gravel	photo
on top of pile		~7800			
North west past star picket			1.2%	Crossed	photo
4m South		~880		Crossed	photo!
~5m South west		~640		Crossed	
West Face		~7600		Gravel	photo
Memory Full @ 2pm - no further recording					
South west		~3300		Grass inside gravel	GE to photo
4m to north east		~1600			GE to photo
3m north west of stockpile		4.1%	(~1600ppm @ stockpile)	photo of whole area	
		~360		Grass	GE
Next to drain		~2515		Grass GE, photo	
Irrigation Area		~250		GE Grass	
Irrigation Area had mostly 0-0.3ppm with one or two readings of 18-50					
0-0.1ppm @ ground + head in Recycling shed					
0-0.1ppm in main building except a					
0.4ppm in men's toilet (ladies unmonitored)					
Near container		~570		GE	
The area west of container had readings of up to 50ppm.					

Date:

Page

SERVICE & CALIBRATION REPORT

Water Quality Meter

Customer Details:

RCA
92 Hill Street
Carrington
Attn: Kenny Yan

Job Number

240944

Date

30/09/2024

Instrument Model:

HORIBA U-52/10m 
Multi-Parameter Water Quality Meter

Instrument Serial Number:

1PH7HSWB 2019

Fault Report

Requires service/calibration.

Repairs Carried Out

Replaced DO membrane. Refilled pH reference electrode.
Cleaned all sensors. Re-calibrated all sensors as follows:

Calibration (in accordance with manufacturer's specifications):

Parameter - unit	Before Calibration	Calibration Value	After calibration	Comment
pH (pH)	7.25	7.01	7.01	Pass
pH (pH)	3.99	4.00	4.00	Pass
ORP (mV)	227	225	225	Pass
Conductivity (mS/cm)	0.000	0.000	0.000	Pass
Conductivity (mS/cm)	0.727	0.718	0.718	Pass
Conductivity (mS/cm)	6.74	6.67	6.67	Pass
Conductivity (mS/cm)	59.1	58.6	58.6	Pass
Turbidity (NTU)	0.0	0.0	0.0	Pass
Turbidity (NTU)	2.1	8.0	8.0	Pass
Turbidity (NTU)	82.7	80.0	80.0	Pass
Turbidity (NTU)	455	400	400	Pass
D.O. zero (mg/L)	0.00	0.00	0.00	Pass
D.O. zero (mg/L)	10.14mg/L @ 21°C	9.12mg/L @21°C	9.12mg/L @21°C	Pass
Temperature (°C)	20.01°C	19.8°C	19.8°C	Pass

Sensors:

pH Glass Electrode	pH Ref Electrode	ORP Electrode	DO Electrode
345078	WGTAD2NV	NH00S3C6	X3H6CF5A

Comments:

MAKE SURE the pH reference electrode is refilled with soln #330 regularly. If the #330 soln solidifies inside the pH reference electrode, remove the liquid junction cap (flat black rubber cap with wick in the middle) and rinse out the old solution with distilled water. Then refill with fresh HORIBA soln # 330 and refit the liquid junction cap. Please read the notes on pH maintenance.

Calibration carried out by:

Tony Fincher

AUSTRALIAN SCIENTIFIC PTY LTD

11 McDougall Street, Kotara, NSW, 2289

TEL: 1800 021 083

E-mail: sales@austscientific.com.au

www.austscientific.com.au

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Calibration certificate number 24RA-60223

Instrument Laser One Serial Number 41039

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Gas verification from 0-1000ppm CH4

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	0.0	0	0	0	0.00	0.00	0.00	0.00
1000	3.02	3.3	3.3	3.3	3.10	0.28	0.03	0.03
1000	11	11.3	11.3	11.3	11.30	0.30	0.03	0.03
1000	102.0	99.5	99.5	99.5	99.50	2.50	0.25	0.25
1000	1006	1000	1000	1000	1000.00	6.00	0.60	0.60

Uncertainty	0.60	%
Max % error	0.60	% FS

Gas verification from 0-100% vol CH4

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.17	2.10	2.10	2.10	2.10	0.07	0.07	0.07
100.00	5.00	5.10	5.10	5.10	5.10	0.10	0.10	0.10
100.00	15.00	15.00	15.00	15.00	15.00	0.00	0.00	0.00
100.00	50.00	50.10	50.10	50.10	50.10	0.10	0.10	0.10
100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00

Uncertainty	0.10	%
Max % error	0.10	% FS

Gas verification from 0-100% CH4 LEL (0-4.4% VOL)

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.17	2.10	2.10	2.10	2.10	0.07	0.07	0.07
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Uncertainty	0.07	%
Max % error	0.07	% FS

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Environmental conditions during calibration

Temp.	23.1	C
Pressure	982.2	mBar

Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	6970767Y	5/10/2029	Synthetic Air
3 ppm	4405001	02/29/2027	CH4
10 ppm	4225861	9/30/2025	CH4
100ppm	CC109096	12/1/2028	CH4
1000 ppm	CC64714	9/27/2028	CH4
1.0% Vol	CC122022	11/15/2028	CH4
2.2% vol	CC81557	9/29/2028	CH4
5.0% vol	TT44360	9/11/2028	CH4
15% vol	481840	6/12/2029	CH4
50% vol	CC708175	1/22/2029	CH4
100% vol	1347010	11/11/2027	CH4

Calibration results: Pass

Next scheduled calibration: 6/24/2025

Calibration date: 6/24/2024

Issued by: Sarah Schafer

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QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 25/6/25		Time: 14:31	
Sampler (s): SH		Bore ID: UW1			
Bore depth (m): 30.45		Depth to aquifer (m): 18.04 18.65		Height above ground level (m): 0.76	
Sample method: Bailer		Sample time: 15:25		Methane reading (ppm): 0-0.1 ppm	
Sample appearance / additional comments: Initially clear, → slightly cloudy / turbid					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☒ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
30L	15.75	7.00	297	1.59	201	3.68	0.080		1.01 TDS
43L	16.26	6.93	309	1.59	247	3.22	0.080		1.01
43L	16.27	6.91	313	1.57	233	3.57	0.079		1.00

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 25/6/25		Time: 13:42	
Sampler (s): SH		Bore ID: UW2			
Bore depth (m): 12.90		Depth to aquifer (m): 8.59 8.55 30L		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 1415		Methane reading (ppm): 0-0.1 ppm	
Sample appearance / additional comments: clear initially => slightly cloudy / turbid					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☒ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
30L	15.01	7.29	280	1.83	66.0	2.42	0.092		1.17 TDS
+3 L	15.31	7.28	291	1.83	100	2.98	0.093		1.17
+3 L	15.55	7.31	291	1.84	91.3	2.93	0.093		1.18

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 26/6/25		Time: 7:43	
Sampler (s): SH		Bore ID: UW3			
Bore depth (m): 21.64		Depth to aquifer (m): 5.90 6.16 9.5L		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 9:00		Methane reading (ppm): 4.1 ppm	
Sample appearance / additional comments: slight yellow hue → clear					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No: UW3
	☒ TOP OF CASING (TOC)		☒ NO		☐ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
9.5L	14.78	6.49	323	3.21	41.6	1.30	0.167		2.05 T DS
+3L	15.33	6.41	286	3.26	26.5	1.02	0.170		2.09
+3L	15.58	6.24	291	3.24	20.4	0.68	0.169		2.07
+3L	15.54	6.24	288	3.25	24.8	1.15	0.169		2.08

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 25/6/25	
Time: 13:28		Surface Water Location ID: US1	
Sampler (s): SH		Sample method: Direct	
Weather: Sunny, Some Cloud, windy.			
Sample appearance: pale pale brown, slightly turbid.			
Additional comments: Very slight flow, sampled using spring hex sample taken			
Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No: US1
	☒ NO		☐ NO

FIELD MEASUREMENTS

TEMP (C)	10.93
pH	8.03
ORP (mV)	252
COND (mS/cm)	0.934
DO (mg/L)	5.40
Salinity (%)	0.046
Turbidity	87.5
Total Dissolved Solids	0.598

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 25/6/25	
Time: 13:02		Surface Water Location ID: U21	
Sampler (s): SH		Sample method: Direct	
Weather: Sunny, some clouds, windy			
Sample appearance: clear, no odour			
Additional comments: Pond water low < 0 on marker			
Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ NO		☒ NO

FIELD MEASUREMENTS

TEMP (C)	14.11
pH	7.73
ORP (mV)	754
COND (mS/cm)	1.36 mS/cm
DO (mg/L)	5.60
Salinity (%)	0.068
Turbidity	7.4
Total Dissolved Solids	0.873

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

URALLA LANDFILL

SURFACE GAS MONITORING FIELD SHEET

Date: 25/6/25	Time: 9:30	Page
Sampler: SH	Temperature (° C): 13.7	
Wind Speed (m/s): 3.6	Wind Direction (bearing): NW	
Other observations: Site sunny with some cloud cover Annidale Bore @ 9am 1016.7 QNH Temp = 6.8°C 1016.4 MSL RH = 67% W @ 37 km/h 7.2 mm rain in previous 24 hrs (9am)		

MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
	9:34 - monitor says 11:46			Fluctuating between 10-86% memory 10%
Base of Vent		~3300		
Top of vent		~120		
Ambient readings of 1				10ppm around Vent
Ambient readings of 1				10-15ppm north face
		1340		grass north face (photo)
		~100		grass not face
		~2300		grass north face (photo)
				near bin
		~230		grass north face
		~1800		grass north face (photo)
wind	picking up max gust			near bin
				89 m/s WNW

Date:	Page
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MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
NW corner		~360		grass
NW corner		~1800		grass (photo)
		~2580		
western face		~1600 2000		grass (photo)
western face		~800		grass near drain (photo)
Backery low		@ corner of		western face
→ Back		on now		@ SS 1/2 bott ?
but		bott		indicator is full
near stockpile @ end of western face		~1800		grass/gravel
First building → Sorting shed — 2.3 ppm				
Second building → Office etc — 2.3 ppm				
Shipping container — 2.3 - 2.6 ppm				
Finished monitoring @ 12:49 -				
- 15:01 on monitor				
Batt = 37 1/2				
Mem = 39 7/8				

Date:

Page

SERVICE & CALIBRATION REPORT

Water Quality Meter

Customer Details:

RCA
92 Hill Street
Carrington
Attn: Kenny Yan

Job Number

240944

Date

30/09/2024

Instrument Model:

HORIBA U-52/10m 
Multi-Parameter Water Quality Meter

Instrument Serial Number:

1PH7HSWB 2019

Fault Report

Requires service/calibration.

Repairs Carried Out

Replaced DO membrane. Refilled pH reference electrode.
Cleaned all sensors. Re-calibrated all sensors as follows:

Calibration (in accordance with manufacturer's specifications):

Parameter - unit	Before Calibration	Calibration Value	After calibration	Comment
pH (pH)	7.25	7.01	7.01	Pass
pH (pH)	3.99	4.00	4.00	Pass
ORP (mV)	227	225	225	Pass
Conductivity (mS/cm)	0.000	0.000	0.000	Pass
Conductivity (mS/cm)	0.727	0.718	0.718	Pass
Conductivity (mS/cm)	6.74	6.67	6.67	Pass
Conductivity (mS/cm)	59.1	58.6	58.6	Pass
Turbidity (NTU)	0.0	0.0	0.0	Pass
Turbidity (NTU)	2.1	8.0	8.0	Pass
Turbidity (NTU)	82.7	80.0	80.0	Pass
Turbidity (NTU)	455	400	400	Pass
D.O. zero (mg/L)	0.00	0.00	0.00	Pass
D.O. zero (mg/L)	10.14mg/L @ 21°C	9.12mg/L @21°C	9.12mg/L @21°C	Pass
Temperature (°C)	20.01°C	19.8°C	19.8°C	Pass

Sensors:

pH Glass Electrode	pH Ref Electrode	ORP Electrode	DO Electrode
345078	WGTAD2NV	NH00S3C6	X3H6CF5A

Comments:

MAKE SURE the pH reference electrode is refilled with soln #330 regularly. If the #330 soln solidifies inside the pH reference electrode, remove the liquid junction cap (flat black rubber cap with wick in the middle) and rinse out the old solution with distilled water. Then refill with fresh HORIBA soln # 330 and refit the liquid junction cap. Please read the notes on pH maintenance.

Calibration carried out by:

Tony Fincher

AUSTRALIAN SCIENTIFIC PTY LTD

11 McDougall Street, Kotara, NSW, 2289

TEL: 1800 021 083

E-mail: sales@austscientific.com.au

www.austscientific.com.au

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Calibration certificate number 24RA-63261

Instrument

Laser One

Serial Number

19251

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Gas verification from 0-1000ppm CH4

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	0.0	0	0	0	0.00	0.00	0.00	0.00
1000	3.01	2.6	2.6	2.6	2.60	0.41	0.04	0.04
1000	11.0	10.2	10.2	10.2	10.20	0.80	0.08	0.08
1000	100.0	99.9	99.9	99.9	99.90	0.10	0.01	0.01
1000	1006	1020	1020	1020	1020.00	14.00	1.40	1.40

Uncertainty	1.40	%
Max % error	1.40	% FS

Gas verification from 0-100% vol CH4

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.18	2.20	2.20	2.20	2.20	0.02	0.02	0.02
100.00	5.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00
100.00	15.00	15.20	15.20	15.20	15.20	0.20	0.20	0.20
100.00	50.00	50.60	50.60	50.60	50.60	0.60	0.60	0.60
100.00	100.00	99.60	99.60	99.60	99.60	0.40	0.40	0.40

Uncertainty	0.60	%
Max % error	0.60	% FS

Gas verification from 0-100% CH4 LEL (0-4.4% VOL)

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.18	2.10	2.10	2.10	2.10	0.08	0.08	0.08
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Uncertainty	0.08	%
Max % error	0.08	% FS

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CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Environmental conditions during calibration

Temp.	23	C
Pressure	983.8	mBar

Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	303802	3/12/2029	Synthetic Air
3 ppm	4405001	02/29/2027	CH4
10 ppm	4225861	9/30/2025	CH4
100ppm	4421183	7/1/2027	CH4
1000 ppm	CC64714	9/27/2028	CH4
1.0% Vol	DT0008070	5/24/2029	CH4
2.2% vol	CC81557	9/29/2028	CH4
5.0% vol	TT44360	9/11/2028	CH4
15% vol	481840	6/12/2029	CH4
50% vol	CC708175	1/22/2029	CH4
100% vol	HP-T-105403	8/22/2028	CH4

Calibration results: Pass

Next scheduled calibration: 9/3/2025

Calibration date: 9/3/2024

Issued by: Sarah Schafer

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QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 10/9/25		Time: 13:30	
Sampler (s): SH		Bore ID: UW1			
Bore depth (m): 30.45		Depth to aquifer (m): 18.04 18.61		Height above ground level (m): 0.76	
Sample method: Bailer		Sample time: 14:27		Methane reading (ppm): 0.0 ppm	
Sample appearance / additional comments: initially clear → slightly cloudy / turbid → pale grey no odour					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☐ YES - Lab No:
	☒ TOP OF CASING (TOC)		☒ NO		☒ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
30L	16.95	6.68	145	1.59 mS/cm	356	5.09	0.080		1.01 TDS g/L
+3	16.83	6.65	196	1.57	209	6.97	0.079		1.01 TDS
+3	16.81	6.61	210	1.55	190	7.73	0.078		0.990 TDS

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 11/9/25		Time: 7:00	
Sampler (s): SH		Bore ID: UW2			
Bore depth (m): 12.50		Depth to aquifer (m): 8.59 8.36		Height above ground level (m): 0.83	
Sample method: Bailer		Sample time: 7:33		Methane reading (ppm): 0.0	
Sample appearance / additional comments: clear initially - slightly turbid/cloudy pale grey/brown					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No: UW2
	☒ TOP OF CASING (TOC)		☒ NO		☐ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
30	15.94	6.86	163	1.86	153	2.44	0.094		1.19 TDS g/L
+3	15.71	6.96	175	1.86	165	2.30	0.094		1.19 TDS g/L
+3	15.74	7.01	189	1.84	235	2.63	0.093		1.18 TDS

ENVIRONMENTAL FIELD SHEET GROUNDWATER MONITORING

WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council		Site: Uralla Landfill	
Project number: 15579a		Date: 11/9/25		Time: 8:53	
Sampler (s): SH		Bore ID: UW3			
Bore depth (m): 21.04		Depth to aquifer (m): 5.90 5.92		Height above ground level (m): 0.03	
Sample method: Bailer		Sample time: 10:15		Methane reading (ppm): 6.6	
Sample appearance / additional comments: clear - slight yellow hue					
Depth measurement location:	☐ SURFACE LEVEL	Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No: UW3
	☒ TOP OF CASING (TOC)		☒ NO		☐ NO

VOLUME (L)	TEMP (C)	pH	ORP (mV)	CONDUCTIVITY (mS/cm)	Turbidity	DO (mg/L)	Salinity (%)	SWL (m TOC)	Comment
9SL	13.75	6.28	224	3.21	46.7	2.53	0.166		2.05 TDS
-13	14.92	6.33	233	5.28	87.0	1.79	0.171		2.11
+3	14.46	6.36	239	3.32	66.0	1.96	0.173		2.13

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 11/9/25	
Time: 7:55		Surface Water Location ID: US1	
Sampler (s): SH		Sample method: Direct	
Weather: Rain, wind, cloud			
Sample appearance: clean → pale brown/yellow no colour			
Additional comments: Sample collected by syringe.			
Duplicate sample collected:	☐ YES - Sample ID:	Laboratory analysis:	☒ YES - Lab No: US1
	☒ NO		☐ NO

FIELD MEASUREMENTS

TEMP (C)	8.98
pH	7.38
ORP (mV)	213
COND (mS/cm)	0.935
DO (mg/L)	4.95
Salinity (%)	0.045
Turbidity	186
Total Dissolved Solids	0.598

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

ENVIRONMENTAL FIELD SHEET WATER SAMPLING RECORD

Project: Environmental Monitoring		Client: Uralla Shire Council	
Project number: 15579a		Date: 11/9/25	
Time: 8:30		Surface Water Location ID: ULI	
Sampler (s): SH		Sample method: Direct	
Weather: Rain, wind, cloud			
Sample appearance: Clear, no odor			
Additional comments: Pond water @ 0.8m on meter Rain in previous 24 hrs $\pm$ 10mm - 20mm			
Duplicate sample collected:	☒ YES - Sample ID: QA	Laboratory analysis:	☒ YES - Lab No: ULI
	☐ NO		☐ NO

FIELD MEASUREMENTS

TEMP (C)	11-15
pH	7.71
ORP (mV)	222
COND (mS/cm)	1.61
DO (mg/L)	4.25
Salinity (%)	0.080
Turbidity	32.0
Total Dissolved Solids	1.03

LABORATORY DETAILS

SAMPLE NO	SAMPLE BOTTLE NO	PRESERVATIVES

Sampled By:

Date:

URALLA LANDFILL

SURFACE GAS MONITORING FIELD SHEET

Date: 10/9/25	Time: 10:00	Page
Sampler: SH	Temperature (°C): 13	
Wind Speed (m/s): 3-9	Wind Direction (bearing): NW	
Other observations: Rain, cloud cover Annandale BOM @ 9:30 11.9°C RH = 94% Wind = NW 28 km/h QNH = 1013.7 hPa MSL = 1011.6 hPa 2.2mm rain in previous 24hrs		

MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
	10:24 -	monitor says	11:04	Fluctuating battery Δ 100 - 782
Base of Vent	10:34	1.1%		memory = 0%
Top of Vent		420 ppm		gust up to 7.6 m/s NW
North face		21400		photo 1 grass
		21400		photo 2 grass
		2400	in to west	
		1980		photo 3 grass
		2300		photo 4 grass
CH ₄ reading between 5-100				close to road
along northern face - getting more readings				
closer to NW corner				
		24200		grass photo 5 towards NW corner

Date:	Page
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MONITORING POINT	TIME	CH ₄ (PPM)	CH ₄ (%)	COMMENTS
		2700		photo 6 grass
		2400		photo 7 nit/erosion/grass
Standoff NW corner		1400		photo 8 grass NW corner
				Photo 9 = N face
Northwest corner		23400		photo 10 - grass (brown)
west face		11500		photo 11 grass / erosion
western face				photo 12
South end of W face				photo 13
SW corner near small stockpile		1400		photo 14
		view 1300 ppm		2m South
Zoomed out of above		1.4%		photo 15
South face close to pumps		2800		photo 16
photo 17+18 Active tip area from irrigation area				
First building - Storage shed		0.0 ppm		
Second building - Office etc		0.0 ppm		
Shipping container - locked		0.0 ppm		
around				
Finished monitoring @ 13:00				
		13:40 on monitor		
		batt = 68%		
		mem = 24%		

Date:

Page

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Calibration certificate number **25RA-70229**
Instrument **Laser One** Serial Number **19249**

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Gas verification from 0-1000ppm CH₄

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1000	2.94	2.7	2.7	2.7	2.70	0.24	0.02	0.02
1000	10.1	10.9	10.9	10.9	10.90	0.80	0.08	0.08
1000	102.0	103.0	103.0	103.0	103.00	1.00	0.10	0.10
1000	1006.0	970.0	970.0	970.0	970.00	36.00	3.60	3.60

Uncertainty	3.60	%
Max % error	3.60	% FS

Gas verification from 0-100% vol CH₄

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00
100.00	2.19	2.1	2.1	2.1	2.10	0.09	0.09	0.09
100.00	5.00	4.6	4.6	4.6	4.60	0.40	0.40	0.40
100.00	15.00	14.1	14.1	14.1	14.10	0.90	0.90	0.90
100.00	50.00	51.2	51.2	51.2	51.20	1.20	1.20	1.20
100.00	100.00	96.9	96.9	96.9	96.90	3.10	3.10	3.10

Uncertainty	3.10	%
Max % error	3.10	% FS

Gas verification from 0-100% CH₄ LEL (0-4.4% VOL)

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	2.10	2.10	2.10	2.10	2.10	0.00	0.00	0.00
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Uncertainty	0.00	%
Max % error	0.00	% FS

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

CERTIFICATION OF CALIBRATION



Issued by: QED Environmental Systems Inc.

Environmental conditions during calibration

Temp.	23.0	C
Pressure	981.9	mBar

Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	2998005Y	3/22/2030	Synthetic Air
3 ppm	CC119197	2/3/2033	CH4
10 ppm	DT0011388	1/28/2033	CH4
100ppm	EB0095114	8/13/2029	CH4
1000 ppm	CC306150	5/30/2029	CH4
1.0% Vol	CC99539	9/26/2028	CH4
2.2% vol	CC499453	6/4/2029	CH4
5.0% vol	NKB1637	6/7/2029	CH4
15% vol	3986999Y	6/10/2029	CH4
50% vol	CC708175	1/22/2029	CH4
100% vol	T-330512	8/22/2028	CH4

Calibration results: Pass

Calibration date: 16/6/2025
DD/MM/YYYY

Next scheduled calibration: 16/6/2026
DD/MM/YYYY

Issued by: Christopher Fleenor

www.qedenv.com (800) 624-2026 info@qedenv.com

QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

SERVICE & CALIBRATION REPORT

Water Quality Meter

Customer Details:

RCA
92 Hill St
Carrington, NSW 2294
Attn: Stuart King - 0412 686 411

Job Number

250729

Date

14/07/2025

Instrument Model:

HORIBA U-52/10m
Multi-Parameter Water Quality Meter

Instrument Serial Number:

1PH7HSWB Oct 2019

Fault Report

Requires service/calibration.

Repairs Carried Out

Replaced pH Glass Electrode - 1 year old, replaced under warranty

Replaced DO membrane and replaced filling soln in the pH reference electrode. Cleaned all sensors (dirty) and re-calibrated all sensors as follows:

Calibration (in accordance with manufacturer's specifications):

Parameter - unit	Before Calibration	Calibration Value	After calibration	Comment
pH (pH)	7.16	7.01	7.01	Pass
pH (pH)	3.69	4.00	4.00	Pass
ORP (mV)	217	225	225	Pass
Conductivity (mS/cm)	0.000	0.000	0.000	Pass
Conductivity (mS/cm)	0.703	0.718	0.718	Pass
Conductivity (mS/cm)	6.31	6.67	6.67	Pass
Conductivity (mS/cm)	56.6	58.6	58.6	Pass
Turbidity (NTU)	6.4	0.0	0.0	Pass
Turbidity (NTU)	18.3	8.0	8.0	Pass
Turbidity (NTU)	73.8	80.0	80.0	Pass
Turbidity (NTU)	307	400	400	Pass
D.O. zero (mg/L)	0.00	0.00	0.00	Pass
D.O. span (mg/L)	9.73mg/L @17.1°C	9.98mg/L @17.1°C	9.98mg/L @17.1°C	Pass
Temperature (°C)	16.10°C	15.9°C	15.9°C	Pass

Sensors:

pH Glass Electrode	pH Ref Electrode	ORP Electrode	DO Electrode
345078	WVH0D0YT	NH00S3C6	X3H6LF5A
NEW - 503192			

Comments:

MAKE SURE the pH reference electrode is refilled with soln #330 regularly. If the #330 soln solidifies inside the pH reference electrode, remove the liquid junction cap (flat black rubber cap with wick in the middle) and rinse out the old solution with distilled water. Then refill with fresh HORIBA soln # 330 and refit the liquid junction cap. If the wick becomes dirty, push it through from the bottom of the cap, and cut 1mm off with a sharp blade. Please read the notes on pH maintenance.

Calibration carried out by:

Oakie Humphries

AUSTRALIAN SCIENTIFIC PTY LTD

11 McDougall Street, Kotara, NSW, 2289

TEL: 1800 021 083

E-mail: sales@austscientific.com.au

www.austscientific.com.au

Appendix C

Summary of Results

Sample Identification		Laboratory PQL	Aquatic Ecosystem Guideline ^A	Human Heqth (Ingestion) Guideline ^B	Solid Waste Landfill Guideline ^C	Irrigation Guideline ^D	UW1	UW1	UW1	UW1	UW2	UW2	UW2	UW2	UW3	UW3	UW3	UW3
Date	16-Jan-25						09-Apr-25	25-Jun-25	10-Sep-25	15-Jan-25	10-Apr-25	25-Jun-25	11-Sep-25	16-Jan-25	10-Apr-25	26-Jun-25	11-Sep-25	
Groundwater Level (m AHD)	84.40						84.27	84.46	84.50	79.34	79.23	79.31	79.50	84.78	84.44	84.47	84.71	
Depth (m top of water surface)	18.71						18.84	18.65	18.61	8.52	8.63	8.55	8.36	5.85	6.19	6.16	5.92	
Sample Description							Clear	Initally clear, became slightly cloudy	Initally clear, slightly cloudy/turbid	Initially clear to slightly cloudy/turbid, pale grey, no odour	Clear to slightly cloudy, no odour	Initally clear, became slightly cloudy	Initally clear, slightly cloudy/turbid	Initially clear to slightly cloudy/turbid, pale grey/brown, no odour	Clear, no odour, some bubbles	Clear, no odour	Slight yellow hue to clear	Clear to slight yellow hue
Sample collected by							RCA-FB	RCA-FB	RCA-SH	RCA-SH	RCA-FB	RCA-FB	RCA-SH	RCA-SH	RCA-FB	RCA-FB	RCA-SH	RCA-SH
Field Readings																		
Temperature (°C)							18.28	20.88	16.27	16.81	19.08	15.72	15.55	13.74	17.24	17.67	15.54	14.46
pH (pH UNIT)		6.5 - 8.0				<6 ^E	9.51"	6.69	6.91	6.61	9.97"	7.06	7.31	7.01	9.16"	6.37	6.24	6.36
ORP (mV)							6	245	313	210	-26	264	291	189	20	230	288	239
Conductivity (µS/cm)		1000					1620	1490	1570	1550	1790	1820	1840	1840	3130	3100	3250	3320
Turbidity (NTU)							10.5	278	233	190	208	149	91.3	235	1.6	1.4	24.8	66
Dissolved Oxygen							2.99	3.23	3.57	7.73	2.42	2.47	2.93	2.65	0.79	0.91	1.15	1.96
Salinity (%)							0.081	0.075	0.079	0.079	0.091	0.092	0.093	0.093	0.163	0.161	0.169	0.173
Methane Gas (ppm)					10000		0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	6.8	4.1	6.6
Non Metqlic Inorganics																		
Total Organic Carbon	1						--	--	--	--	--	13	--	12	25	34	25	11
Dissolved Oxygen	0.1						--	--	--	--	--	10	--	9.8	--	--	--	--
Free Carbon Dioxide as CO2	1						--	--	--	--	--	6	--	61	302	22	357	454
Total Carbon Dioxide as CO2	1						--	--	--	--	--	541	--	648	1050	686	1040	1250
Nutrients																		
TKN	0.1						--	--	--	--	--	0.9	--	0.9	2.6	2.8	2.1	2.5
Nitrite	0.01						--	--	--	--	--	<0.01	--	0.01	0.55	0.56	0.57	0.61
Nitrate	0.01						--	--	--	--	--	0.08	--	0.09	8.1	6.18	6.59	5.67
Total Oxidisable Nitrogen as N	0.01	0.015				5	--	--	--	--	--	0.08	--	0.1	8.65	6.74	7.16	6.28
Total Nitrogen as N*	0.1						--	--	--	--	--	0.98	--	1	11.25	9.54	9.26	8.8
Major Anions																		
Hydroxide alkalinity as CaCO3	1						--	--	--	--	--	<1	--	<1	<1	<1	<1	<1
Carbonate alkalinity as CaCO3	1						--	--	--	--	--	21	--	<1	<1	<1	<1	<1
Bicarbonate alkalinity as CaCO3	1						--	--	--	--	--	598	--	667	848	755	779	903
Total akalinity as CaCO3	1						--	--	--	--	--	619	--	667	848	755	779	903
Chloride	1						--	--	--	--	--	248	--	227	524	539	550	537
Metals (dissolved)																		
Arsenic	0.001	0.013	0.01			0.1	--	--	--	--	--	0.004	--	0.004	0.04	0.047	0.047	0.049
Iron	0.05	0.3				0.2	--	--	--	--	--	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese	0.001	1.9	0.5			0.2	--	--	--	--	--	0.015	--	0.008	0.03	0.034	0.033	0.036

All results are in units of mg/L unless otherwise stated

Blank Cell indicates no criterion available

* Total nitrogen calculated from TKN and total oaiidisable nitrogen as N

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^A ANZG 2018 95% Protection Level for Fresh Waters and Default trigger values for aquatic ecosystems in upland rivers of south-east Australia that are slightly-moderately disturbed

^B NHMRC Australian Drinking Water Guidelines, 2011.

^C EPA Solid Waste Landfill Guidelines, methane in enclosed spaces

^D Guidelines presented based on ANZECC Long term irrigation water trigger value for use up to 100 years

^E Causes corrosion of pipes

ANZG guidelines in *italics* are low level reliability guidelines

NHMRC arsenic guidelines are based on total arsenic

Results shown in **BOLD** are in excess of the 95% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Results shown in *italics* are in excess of the solid waste guideline

Results shown in patterned cells are in excess of the long term irrigation guidelines

" The January pH results have been omitted, as the elevated readings were attributed to probe malfunction and are not considered representative of actual water conditions.

Sample Identification	Laboratory PQL	Aquatic Ecosystem Guideline ^A	Human Health (Ingestion) Guideline ^B	Irrigation Guideline ^C	Livestock Guideline ^D	US1	US1	US1	US1
Date						15-Jan-25	10-Apr-25	25-Jun-25	11-Sep-25
Depth (m top of water surface)						0	0	0	0
Volumetric Flow Rate (kL/day)						Nil Observed	Nil Observed	Nil Observed	Nil Observed
Sample Description						Clear/slightly turbid	Clear/slightly turbid	Pale rown/slightly turbid	Clear to pale brown/yellow, no odour
Sample collected by						RCA-FB	RCA-FB	RCA-SH	RCA-SH
Field Readings									
Temperature (°C)						30.29	13.77	10.93	8.98
pH (pH UNIT)		6.5 - 8.0		<6 ^E		10.79"	7.77	8.03	7.38
ORP (mV)						-111	75	252	213
Conductivity (µS/cm)		1000			>3582	1890	1560	934	935
Turbidity (NTU)						202	172	87.5	186
Dissolved Oxygen						3.65	4.02	5.4	4.95
Salinity (%)						0.096	0.078	0.046	0.048
General Water Quality									
Total Suspended Solids	1					--	44	--	197
Non Metallic Inorganics									
Total Organic Carbon	1					--	26	--	22
Nutrients									
TKN	0.1					--	1.8	--	1.4
Nitrite	0.01					--	<0.01	--	0.01
Nitrate	0.01					--	<0.01	--	0.11
Total Oxidisable Nitrogen as N	0.01	0.015		5	90	--	<0.01	--	0.12
Total Nitrogen as N ^A	0.1					--	1.805	--	1.5
Total Phosphorus as P	0.01	0.02		0.05		--	0.21	--	0.18
Dissolved Major Cations									
Calcium	1					--	70	--	44
Magnesium	1					--	76	--	43
Sodium	1					--	173	--	99
Potassium	1					--	5	--	5
Major Anions									
Hydroxide Alkalinity as CaCO ₃	1					--	0.5	--	0.05
Carbonate Alkalinity as CaCO ₃	1					--	32	--	0.05
Bicarbonate Alkalinity as CaCO ₃	1					--	538	--	340
Total Alkalinity as CaCO ₃	1					--	570	--	340
Chloride	1					--	211	--	82
Sulphate	1					--	<10*	--	17
Metals (total)									
Arsenic	0.001	0.013	0.01	0.1	0.5	--	0.009	--	0.006
Chromium	0.001	0.001	0.05	0.1	1	--	0.003	0.011	0.009
Copper	0.001	0.0014	2	0.2	(0.4, 1, 5 & 5) ^F	--	0.002	--	0.006
Iron	0.05	0.3		0.2		--	14	--	13.6
Manganese	0.005	1.9	0.5	0.2		--	2.37	--	<u>1.62</u>
Zinc	0.001	0.008		2	20	--	0.018	--	0.032
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Naphthalene	0.005					--	<0.005	--	<0.005
Benzene	0.001	0.95	0.001		5	--	<0.001	--	<0.001
Toluene	0.002	0.18	0.8			--	<0.002	--	<0.002
Ethylbenzene	0.002	0.08	0.3			--	<0.002	--	<0.002
meta- and para-Xylene	0.002	0.275				--	<0.002	--	<0.002
ortho-Xylene	0.002	0.35				--	<0.002	--	<0.002

All results are in units of mg/L unless otherwise stated

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^B NHMRC Australian Drinking Water Guidelines, 2011.

^C Guidelines presented based on ANZECC Long term irrigation water trigger value for use up to 100 years

^D Based on low risk trigger values for livestock drinking water

^E Causes corrosion of pipes

^F Trigger values for sheep, cattle, pigs and poultry

ANZG guidelines in *italics* are low level reliability guidelines

NHMRC arsenic guidelines are based on total arsenic

ANZG and NHMRC guidelines for chromium are based on Cr (VI)

Results shown in **BOLD** are in excess of the 95% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Results shown in patterned cells are in excess of the long term irrigation guidelines

Results shown in **red text** are in excess of the livestock guidelines

[^] Total nitrogen calculated from TKN and total oxidisable nitrogen as N

" The January pH result (10.79) has been omitted, as the elevated reading was attributed to probe malfunction and is not considered representative of actual water conditions.

* PQL was raised to 10 mg/L in the April 2025 monitoring due to sample matrix

Sample Identification		Laboratory PQL	Aquatic Ecosystem Guideline ^A	Human Health (Ingestion) Guideline ^B	Irrigation Guideline ^C	UL1	UL1	UL1	UL1
Date Sampled						15-Jan-25	10-Apr-25	25-Jun-25	11-Sep-25
Depth in pond (m top of water surface)*						<0	<0	<0	<0
Sample Description						Clear to slightly turbid	Clear to slightly turbid	Clear, no odour	Clear, no odour
Sample collected by						RCA-FB	RCA-FB	RCA-SH	RCA-SH
Field Readings									
Temperature (°C)					28.35	20.47	14.11	11.15	
pH (pH UNIT)		6.5 - 8.0		<6 ^D	11.48"	8.25	7.73	7.71	
ORP (mV)					-51	150	254	222	
Conductivity (µS/cm)		1000			1530	1340	1360	1610	
Turbidity (NTU)					150	53.9	7.4	32	
Dissolved Oxygen					5.25	4.57	5.6	4.25	
Salinity (%)					0.076	0.066	0.068	0.08	
Non Metallic Inorganics									
Total Organic Carbon	1				--	43	--	32	
Nutrients									
TKN	0.1				--	7	--	15.1	
Nitrite	0.01				--	0.21	--	0.15	
Nitrate	0.01				--	0.66	--	0.46	
Total Oxidisable Nitrogen as N	0.01	0.015		5	--	0.87	--	0.61	
Total Nitrogen as N ^A					--	7.87	--	15.7	
Total Phosphorus as P	0.01	0.02		0.05	--	0.16	--	0.04	
Major Anions									
Hydroxide Alkalinity as CaCO ₃	1				--	<1	--	<1	
Carbonate Alkalinity as CaCO ₃	1				--	21.0	--	<1	
Bicarbonate Alkalinity as CaCO ₃	1				--	457	--	655	
Total Alkalinity as CaCO ₃	1				--	478	--	655	
Chloride	1				--	179	--	127	
Metals (total)									
Arsenic	0.001	0.013	0.01	0.1	--	0.007	--	0.001	
Boron	0.05	0.94	4	0.5	--	0.38	--	0.35	
Chromium	0.001	0.001		0.1	--	0.003	--	0.002	
Lead	0.001	0.0034	0.01	2	--	<0.001	--	<0.001	
Manganese	0.005	1.9	0.5	0.2	--	0.194	--	0.537	
Zinc	0.005	0.008		2	--	0.007	--	0.006	
Iron	0.05	0.3		0.2	--	1.19	--	0.37	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Benzene	0.001	0.18	0.8		--	--	--	--	
Toluene	0.002	0.08	0.3		--	--	--	--	
Ethylbenzene	0.002	0.275			--	--	--	--	
meta- and para-Xylene	0.002	0.35			--	--	--	--	
ortho-Xylene	0.002				--	--	--	--	
Organochlorine Pesticides (OCP)									
Heptachlor	0.0005	0.00009			--	<0.0005	--	<0.0005	
Aldrin	0.0005	0.000001	0.0003		--	<0.0005	--	<0.0005	
Heptachlor epoxide	0.0005		0.0003		--	<0.0005	--	<0.0005	
Dieldrin	0.0005	0.00001			--	<0.0005	--	<0.0005	
DDE	0.0005	0.00003			--	<0.0005	--	<0.0005	
Endrin	0.0005	0.00002			--	<0.0005	--	<0.0005	
DDD	0.0005		0.03		--	<0.0005	--	<0.0005	
DDT	0.002	0.00001	0.009		--	<0.002	--	<0.002	
Methoxychlor	0.002	0.000005			--	<0.002	--	<0.002	
Chlordane	0.0005	0.00008	0.002		--	<0.0005	--	<0.0005	
Endosulfan	0.0005	0.0002	0.02		--	<0.0005	--	<0.0005	
Organophosphorous Pesticides (OPP)									
Dichlorvos	0.0005		0.005		--	<0.0005	--	<0.0005	
Demeton-S-methyl	0.0005	0.004			--	<0.0005	--	<0.0005	
Dimethoate	0.0005	0.00015	0.007		--	<0.0005	--	<0.0005	
Diazinon	0.0005	0.00001	0.004		--	<0.0005	--	<0.0005	
Parathion-methyl	0.002		0.0007		--	<0.002	--	<0.002	
Malathion	0.0005	0.00005			--	<0.0005	--	<0.0005	
Fenthion	0.0005	0.0002			--	<0.0005	--	<0.0005	
Chlorpyrifos ^E	0.0005	0.00001			--	<0.0005	--	<0.0005	
Parathion	0.002	0.000004			--	<0.002	--	<0.002	
Fenamiphos	0.0005		0.5		--	<0.0005	--	<0.0005	
Ethion	0.0005		4		--	<0.0005	--	<0.0005	
Azinphos-methyl	0.0005	0.00002	0.03		--	<0.0005	--	<0.0005	
Total Chlorfenvinphos	0.0005		0.002		--	<0.0005	--	<0.0005	
Volatile Organic Compounds (VOC)									
VOC (67 Compounds)	0.625				--	<0.625	--	<0.625	

All results are in units of mg/L unless otherwise stated

Blank Cell indicates no criterion available

* Depth reading taken from within leachate dam.

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^B NHMRC Australian Drinking Water Guidelines, 2011.

^C Guidelines presented based on ANZECC Long term irrigation water trigger value for use up to 100 years

^D Causes corrosion of pipes

^E Bioaccumulative Compounds

^A Total nitrogen calculated from TKN and total oxidisable nitrogen as N

ANZG guidelines in *italics* are low level reliability guidelines

NHMRC arsenic guidelines are based on total arsenic

ANZG and NHMRC guidelines for chromium are based on Cr (VI)

Results shown in shading are in excess of the 99% aquatic ecosystems guidelines

Results shown in **BOLD** are in excess of the 95% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Results shown in patterned cells are in excess of the long term irrigation guidelines

" The January pH result (11.48) has been omitted, as the elevated reading was attributed to probe malfunction and is not considered representative of actual water conditions.

Sample Identification	Laboratory PQL	Aquatic Ecosystem Guideline ^A	Human Health (Ingestion) Guideline ^B	Irrigation Guideline ^C	Livestock Guideline ^D	EPL 2	US1	US2	US3
Date						04-Aug-25	04-Aug-25	04-Aug-25	04-Aug-25
Sample collected by						USC	USC	USC	USC
General Water Quality									
pH (pH UNIT)		6.5 - 8.0		<6 ^E		8.17	7.91	7.84	7.57
Electrical Conductivity (µS/cm)		1000			>3582	1010	660	439	359
Total Suspended Soilds	1					30	26	7	8
Dissolved Oxygen (mg/L)						8.5	9.4	10.1	9.7
Non Metallic Inorganics									
Total Organic Carbon	1					35	32	26	23
Nutrients									
TKN	0.1					8.2	4.6	2.9	2.4
Total Oxidisable Nitrogen as N	0.01	0.015		5	90	6.99	1.17	0.8	0.63
Total Phosphorus as P	0.01	0.02		0.05		0.16	0.17	0.13	0.12
Dissolved Major Cations									
Calcium	1					52	36	22	16
Magnesium	1					28	21	12	11
Sodium	1					84	57	37	34
Potassium	1					39	30	16	15
Major Anions									
Hydroxide Alkalinity as CaCO ₃	1					<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	1					<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	1					392	258	166	133
Total Alkalinity as CaCO ₃	1					392	258	166	133
Chloride	1					92	56	36	30
Sulphate	1					21	38	1	9
Metals (total)									
Arsenic	0.001	0.013	0.01	0.1	0.5	0.002	0.002	0.002	0.002
Chromium	0.001	0.001	0.05	0.1	1	0.005	0.006	0.007	0.008
Copper	0.001	0.0014	2	0.2	(0.4, 1, 5 & 5) ^F	0.022	0.017	0.009	0.008
Iron	0.05	0.3		0.2		1.7	2.3	2.57	2.59
Manganese	0.001	1.9	0.5	0.2		0.266	0.144	0.076	0.049
Zinc	0.005	0.008		2	20	0.028	0.026	0.015	0.019
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Naphthalene	0.005					<0.005	<0.005	<0.005	<0.005
Benzene	0.001	0.95	0.001		5	<0.001	<0.001	<0.001	<0.001
Toluene	0.002	0.18	0.8			<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.002	0.08	0.3			<0.002	<0.002	<0.002	<0.002
meta- and para-Xylene	0.002	0.275				<0.002	<0.002	<0.002	<0.002
ortho-Xylene	0.002	0.35				<0.002	<0.002	<0.002	<0.002

All results are in units of mg/L unless otherwise stated

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^A ANZG 2018 95% Protection Level for Fresh Waters and Default trigger values for aquatic ecosystems in upland rivers of south-east Australia that are slightly-moderately disturbed

^B NHMRC Australian Drinking Water Guidelines, 2011.

^C Guidelines presented based on ANZECC Long term irrigation water trigger value for use up to 100 years

^D Based on low risk trigger values for livestock drinking water

^E Causes corrosion of pipes

^F Trigger values for sheep, cattle, pigs and poultry

ANZG guidelines in *italics* are low level reliability guidelines

NHMRC arsenic guidelines are based on total arsenic

ANZG and NHMRC guidelines for chromium are based on Cr (VI)

Results shown in **BOLD** are in excess of the 95% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Results shown in patterned cells are in excess of the long term irrigation guidelines

Results shown in **red text** are in excess of the livestock guidelines

Appendix D

Quality Assurance and Laboratory Report Sheets

Quality Assurance Type		Primary PQL	Intralaboratory Duplicate			RPD %	Trip Blank	Trip Spike
Sample Identification			UL1	QA	Trip Blank		Trip Spike 7	
Date			10-Apr-25				4-Apr-25	3-Apr-25
Sample Description			Clear no odour				Water	Water
Sample Purpose		Quality Assurance			Quality Assurance	Quality Assurance		
Sample Collected by		RCA - SH			Laboratory	Laboratory		
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)								
Benzene	0.001	--	--	--	<0.001	85%		
Toluene	0.002	--	--	--	<0.002	85%		
Ethylbenzene	0.002	--	--	--	<0.002	85%		
meta- and para-Xylene	0.002	--	--	--	<0.002	90%		
ortho-Xylene	0.002	--	--	--	<0.002	90%		
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	0.005	--	--	--	<0.005	100%		
Total Recoverable Hydrocarbons (TRH)								
TRH C ₆ -C ₁₀	0.02	--	--	--	<0.02	--		
Metals								
Arsenic	0.001	0.007	0.004	54.5	--	--		
Manganese	0.001	0.194	0.183	5.8	--	--		
Iron	0.05	1.19	0.59	67.4	--	--		
Non Metallic Inorganics								
Total Organic Carbon	1	43	39	9.8	--	--		
Nutrients								
TKN	0.1	7	6.9	1.4	--	--		
Nitrite	0.01	0.21	0.17	21.1	--	--		
Nitrate	0.01	0.66	0.72	8.7	--	--		
Total Oxidisable Nitrogen as N	0.01	0.87	0.89	2.3	--	--		
Major Anions								
Hydroxide Alkalinity as CaCO ₃	1	0.5	0.5	0.0	--	--		
Carbonate Alkalinity as CaCO ₃	1	21	22	4.7	--	--		
Bicarbonate Alkalinity as CaCO ₃	1	457	455	0.4	--	--		
Total Alkalinity as CaCO ₃	1	478	476	0.4	--	--		
Chloride	1	179	162	10.0	--	--		

Note all units in mg/L

PQL = Practical Quantitation Limit.

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results >30%

BOLD identifies where trip blank results >PQL

BOLD identifies where trip spike results <70% and / or >130%

Quality Assurance Type	Primary PQL	Intralaboratory Duplicate			RPD %	Trip Blank	Trip Spike	
Sample Identification		UL1	QA			Trip Blank	Trip Spike	
Date		11-Sep-25				4-Sep-25	4-Sep-25	
Sample Description		Clear no odour				Water	Water	
Sample Purpose		Quality Assurance				Quality Assurance	Quality Assurance	
Sample Collected by		RCA - SH			Laboratory	Laboratory		
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)								
Benzene	0.001	--	--	--	<0.001	90%		
Toluene	0.002	--	--	--	<0.002	75%		
Ethylbenzene	0.002	--	--	--	<0.002	75%		
meta- and para-Xylene	0.002	--	--	--	<0.002	75%		
ortho-Xylene	0.002	--	--	--	<0.002	80%		
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	0.005	--	--	--	<0.005	90%		
Total Recoverable Hydrocarbons (TRH)								
TRH C ₆ -C ₁₀	0.02	--	--	--	<0.02	--		
Metals								
Arsenic	0.001	0.001	0.001	0.0	--	--		
Manganese	0.001	0.537	0.532	0.9	--	--		
Iron	0.05	0.37	0.35	5.6	--	--		
Non Metallic Inorganics								
Total Organic Carbon	1	32	32	0.0	--	--		
Nutrients								
TKN	0.1	15.1	15.7	3.9	--	--		
Nitrite	0.01	0.15	0.14	6.9	--	--		
Nitrate	0.01	0.46	0.48	4.3	--	--		
Total Oxidisable Nitrogen as N	0.01	0.61	0.62	1.6	--	--		
Major Anions								
Hydroxide Alkalinity as CaCO ₃	1	0.5	0.5	0.0	--	--		
Carbonate Alkalinity as CaCO ₃	1	0.5	0.5	0.0	--	--		
Bicarbonate Alkalinity as CaCO ₃	1	655	659	0.6	--	--		
Total Alkalinity as CaCO ₃	1	655	659	0.6	--	--		
Chloride	1	127	126	0.8	--	--		

Note all units in mg/L

PQL = Practical Quantitation Limit.

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results >30%

BOLD identifies where trip blank results >PQL

BOLD identifies where trip spike results <70% and / or >130%



CERTIFICATE OF ANALYSIS

Work Order : ES2501140
Client : ROBERT CARR & ASSOCIATES P/L
Contact : MS FIONA BROOKER
Address : 92 HILL STREET
CARRINGTON NSW 2294
Telephone : +61 02 4902 9200
Project : 15579a - Quarterly Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : NSW Custom BQ 2024
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Danae Hambly
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 16-Jan-2025 16:00
Date Analysis Commenced : 17-Jan-2025
Issue Date : 23-Jan-2025 13:57



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

Ankit Joshi

Senior Chemist - Inorganics

Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	UW3	----	----	----	----
Sampling date / time					16-Jan-2025 09:05	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2501140-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EA165: CO2 - Free and Total									
Free Carbon Dioxide as CO2	85540-96-1	1	mg/L		302	----	----	----	----
Total Carbon Dioxide as CO2	85540-96-1	1	mg/L		1050	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		848	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		848	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		524	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.040	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		0.030	----	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		0.55	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		8.10	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		8.65	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		2.6	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		25	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2501140	Page	: 1 of 5
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Danae Hambly
Address	: 92 HILL STREET CARRINGTON NSW 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Project	: 15579a - Quarterly Monitoring	Date Samples Received	: 16-Jan-2025
Order number	: ----	Date Analysis Commenced	: 17-Jan-2025
C-O-C number	: ----	Issue Date	: 23-Jan-2025
Sampler	: ----		
Site	: ----		
Quote number	: NSW Custom BQ 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 6316338)									
ES2501150-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	71	70	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	71	70	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 6318448)									
EN2500606-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	200	204	1.8	0% - 20%
ME2500080-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	51	51	0.0	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6325903)									
ES2501108-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.21	0.22	0.0	No Limit
ES2501113-005	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.011	0.010	0.0	0% - 50%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.37	0.38	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6318450)									
ES2501140-001	UW3	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.55	0.55	0.0	0% - 20%
ES2501155-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.03	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6318566)									
ES2501098-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	3.28	3.21	2.2	0% - 20%
EW2500194-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.26	0.26	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6318562)									
ES2501098-006	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.7	0.0	0% - 50%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6318562) - continued									
EW2500194-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 6322735)									
ES2500895-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
ME2500083-007	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLot: 6316338)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	97.8	81.0	115
				----	50 mg/L	95.6	80.0	128
ED045G: Chloride by Discrete Analyser (QCLot: 6318448)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	99.2	80.9	127
				<1	1000 mg/L	91.4	80.9	127
EG020F: Dissolved Metals by ICP-MS (QCLot: 6325903)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	88.0	85.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	86.8	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	87.7	82.0	112
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6318450)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.2	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6318566)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6318562)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	93.0	69.0	123
				<0.1	2.5 mg/L	95.2	70.0	123
EP005: Total Organic Carbon (TOC) (QCLot: 6322735)								
EP005: Total Organic Carbon	----	1	mg/L	<1	10 mg/L	105	72.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Acceptable Limits (%)	
					MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
ED045G: Chloride by Discrete Analyser (QCLot: 6318448)							
EN2500606-002	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	107	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6325903)							
ES2501108-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	119	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	114	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6318450)							
ES2501140-001	UW3	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	93.5	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6318566)							
EW2500194-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	117	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6318562)							
ES2501098-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.4	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6322735)							
ES2500895-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	112	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2501140	Page	: 1 of 4
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 15579a - Quarterly Monitoring	Date Samples Received	: 16-Jan-2025
Site	: ----	Issue Date	: 23-Jan-2025
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) UW3	16-Jan-2025	----	----	----	17-Jan-2025	30-Jan-2025	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) UW3	16-Jan-2025	----	----	----	17-Jan-2025	13-Feb-2025	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) UW3	16-Jan-2025	----	----	----	22-Jan-2025	15-Jul-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) UW3	16-Jan-2025	----	----	----	17-Jan-2025	18-Jan-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural (EK059G) UW3	16-Jan-2025	----	----	----	17-Jan-2025	18-Jan-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Natural (EK061G) UW3	16-Jan-2025	17-Jan-2025	17-Jan-2025	✓	17-Jan-2025	14-Feb-2025	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulfuric Acid (EP005) UW3	16-Jan-2025	----	----	----	22-Jan-2025	13-Feb-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Free and Total CO2	EA165-P	WATER	In house: Referenced to APHA 4500-CO2 D. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



ALS Laboratory: please tick →

☐ Perth: 10 Mod Way, Malaga WA 6095
 Ph: 08 9209 7656 E: enquiries.perth@aleanviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250
 Ph: 08 6331 2128 E: enquiries.launceston@aleanviro.com

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice - frozen ice chips present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt	10	10	
Other comment:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	
--	--

[illegible]

Environmental Division
Sydney
Work Order Reference
ES2501140



Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Aial HCl Preserved; VS = VOA Aial Sodium Bisulfate Preserved; VS = VOA Aial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag;



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2501140**

Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **92 HILL STREET
CARRINGTON NSW 2294**

E-mail : **fionab@rca.com.au**
Telephone : **+61 02 4902 9200**
Facsimile : **+61 02 4902 9299**

Project : **15579a - Quarterly Monitoring**
Order number : **----**

C-O-C number : **----**
Site : **----**
Sampler :

Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **danae.hambly@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Page : **1 of 2**
Quote number : **EN2023ROBCAR0002 (NSW Custom
BQ 2024)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **16-Jan-2025 16:00**
Client Requested Due : **23-Jan-2025**
Date

Issue Date : **16-Jan-2025**
Scheduled Reporting Date : **23-Jan-2025**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **1**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **5.4 - Ice present**
No. of samples received / analysed : **1 / 1**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA165-PH CO2 - Free and Total (Default)	WATER - ED037-P Alkalinity as CaCO3 (Auto Titrator)	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EK061G Total Kjeldahl Nitrogen as N (TKN) By Discrete	WATER - EP005 Total Organic Carbon (TOC)	WATER - NT-04 Nitrite and Nitrate
ES2501140-001	16-Jan-2025 09:05	UW3	✓	✓	✓	✓	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au



CERTIFICATE OF ANALYSIS

Work Order : **ES2510434**
Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **92 HILL STREET**
CARRINGTON NSW 2294
Telephone : **+61 02 4902 9200**
Project : **15579a - 6 Monthly Monitoring**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **NSW Custom BQ 2024**
No. of samples received : **7**
No. of samples analysed : **7**

Page : **1 of 11**
Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**
Telephone : **+61-2-8784 8555**
Date Samples Received : **10-Apr-2025 16:22**
Date Analysis Commenced : **11-Apr-2025**
Issue Date : **17-Apr-2025 19:55**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- ED041G: LOR raised for Sulfate due to sample matrix
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
				Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	44	----	----	----	----
EA165: CO2 - Free and Total								
Free Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	6	22	----	----
Total Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	541	686	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	32	21	<1	21	22
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	538	598	755	457	455
Total Alkalinity as CaCO3	----	1	mg/L	570	619	755	478	476
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	211	248	539	179	162
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	70	----	----	----	----
Magnesium	7439-95-4	1	mg/L	76	----	----	----	----
Sodium	7440-23-5	1	mg/L	173	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	0.004	0.047	----	0.004
Manganese	7439-96-5	0.001	mg/L	----	0.015	0.034	----	0.183
Iron	7439-89-6	0.05	mg/L	----	<0.05	<0.05	----	0.59
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.009	----	----	0.007	----
Chromium	7440-47-3	0.001	mg/L	0.003	----	----	0.003	----
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID				US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	2.37	----	----	0.194	----
Zinc	7440-66-6	0.005	mg/L	0.018	----	----	0.007	----
Boron	7440-42-8	0.05	mg/L	----	----	----	0.38	----
Iron	7439-89-6	0.05	mg/L	14.0	----	----	1.19	----
EG049T: Total Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	----	----	<0.01	----
EG050T: Total Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	----	<0.01	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.56	0.21	0.17
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.08	6.18	0.66	0.72
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.08	6.74	0.87	0.89
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	0.9	2.8	7.0	6.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.21	----	----	0.16	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	17.3	----	----	----	----
ø Total Cations	----	0.01	meq/L	17.4	----	----	----	----
ø Ionic Balance	----	0.01	%	0.17	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	26	13	34	43	39
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	----	10.0	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	----	----	----	<0.5	----
beta-BHC	319-85-7	0.5	µg/L	----	----	----	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	----	----	----	<0.5	----
delta-BHC	319-86-8	0.5	µg/L	----	----	----	<0.5	----
Heptachlor	76-44-8	0.5	µg/L	----	----	----	<0.5	----
Aldrin	309-00-2	0.5	µg/L	----	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	----	----	----	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L	----	----	----	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	----	----	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L	----	----	----	<0.5	----
Endrin	72-20-8	0.5	µg/L	----	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L	----	----	----	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	----	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	----	----	----	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	----	----	----	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	----	----	----	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L	----	----	----	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	----	----	----	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	----	----	----	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	----	----	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Monocrotophos	6923-22-4	2.0	µg/L	----	----	----	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	----	----	----	<0.5	----
Diazinon	333-41-5	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	----	----	----	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	----	----	----	<2.0	----
Malathion	121-75-5	0.5	µg/L	----	----	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	----	----	----	<0.5	----
Parathion	56-38-2	2.0	µg/L	----	----	----	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	----	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	----	----	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	----	----	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	----	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	----	----	----	<0.5	----
Ethion	563-12-2	0.5	µg/L	----	----	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	----	----	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	----	----	----	<0.5	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	----	----	----	<5	----
1,2-Dichloropropane	78-87-5	5	µg/L	----	----	----	<5	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	----	----	----	<5	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	----	----	----	<5	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	----	----	----	<5	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	----	----	----	<50	----
Chloromethane	74-87-3	50	µg/L	----	----	----	<50	----
Vinyl chloride	75-01-4	50	µg/L	----	----	----	<50	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Bromomethane	74-83-9	50	µg/L	----	----	----	<50	----
Chloroethane	75-00-3	50	µg/L	----	----	----	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L	----	----	----	<50	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	----	----	<5	----
Iodomethane	74-88-4	5	µg/L	----	----	----	<5	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	----	----	<5	----
1,1-Dichloroethane	75-34-3	5	µg/L	----	----	----	<5	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	----	----	<5	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	----	----	<5	----
1,1-Dichloropropylene	563-58-6	5	µg/L	----	----	----	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	----	----	<5	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	----	----	<5	----
Trichloroethene	79-01-6	5	µg/L	----	----	----	<5	----
Dibromomethane	74-95-3	5	µg/L	----	----	----	<5	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	----	----	----	<5	----
1,3-Dichloropropane	142-28-9	5	µg/L	----	----	----	<5	----
Tetrachloroethene	127-18-4	5	µg/L	----	----	----	<5	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	----	----	----	<5	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	----	----	----	<5	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	----	----	----	<5	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	----	----	----	<5	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	----	----	----	<5	----
Pentachloroethane	76-01-7	5	µg/L	----	----	----	<5	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	----	----	----	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	----	----	<5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	----	----	<5	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	US1	UW2	UW3	UL1	QA
Sampling date / time				10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds - Continued									
Bromobenzene	108-86-1	5	µg/L	----	----	----	<5	----	
2-Chlorotoluene	95-49-8	5	µg/L	----	----	----	<5	----	
4-Chlorotoluene	106-43-4	5	µg/L	----	----	----	<5	----	
1.3-Dichlorobenzene	541-73-1	5	µg/L	----	----	----	<5	----	
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	----	----	<5	----	
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	----	----	<5	----	
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	----	----	<5	----	
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	----	----	----	<5	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L	----	----	----	<5	----	
Bromodichloromethane	75-27-4	5	µg/L	----	----	----	<5	----	
Dibromochloromethane	124-48-1	5	µg/L	----	----	----	<5	----	
Bromoform	75-25-2	5	µg/L	----	----	----	<5	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%	----	----	----	64.4	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%	----	----	----	89.1	----	
EP074S: VOC Surrogates									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	US1	UW2	UW3	UL1	QA
Sampling date / time					10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00	10-Apr-2025 00:00
Compound	CAS Number	LOR	Unit		ES2510434-001	ES2510434-002	ES2510434-003	ES2510434-004	ES2510434-005
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
1.2-Dichloroethane-D4	17060-07-0	5	%		----	----	----	103	----
Toluene-D8	2037-26-5	5	%		----	----	----	105	----
4-Bromofluorobenzene	460-00-4	5	%		----	----	----	102	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		93.8	----	----	----	----
Toluene-D8	2037-26-5	2	%		104	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		108	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TRIP BLANK	TRIP SPIKE	----	----	----
Sampling date / time					10-Apr-2025 00:00	10-Apr-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2510434-006	ES2510434-007	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	17	----	----	----
Toluene	108-88-3	2	µg/L		<2	17	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	17	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	18	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	18	----	----	----
^ Total Xylenes	----	2	µg/L		<2	36	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	87	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	21	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		100	73.8	----	----	----
Toluene-D8	2037-26-5	2	%		113	85.3	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		119	93.4	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order : **ES2510434**

Page : 1 of 14

Client : **ROBERT CARR & ASSOCIATES P/L**

Laboratory : Environmental Division Sydney

Contact : MS FIONA BROOKER

Contact : Danae Hambly

Address : 92 HILL STREET
CARRINGTON NSW 2294

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 4902 9200

Telephone : +61-2-8784 8555

Project : 15579a - 6 Monthly Monitoring

Date Samples Received : 10-Apr-2025

Order number : ----

Date Analysis Commenced : 11-Apr-2025

C-O-C number : ----

Issue Date : 17-Apr-2025

Sampler : ----

Site : ----

Quote number : NSW Custom BQ 2024

No. of samples received : 7

No. of samples analysed : 7



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC
 * = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6511823)									
ES2510346-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	75	78	3.9	0% - 50%
ES2510377-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	134	138	3.3	0% - 20%
ES2510446-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	174	157	9.8	0% - 20%
ES2510479-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	50	50	0.0	0% - 50%
ED037P: Alkalinity by PC Titrator (QC Lot: 6506535)									
ES2510433-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	97	99	2.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	97	99	2.0	0% - 20%
ES2510651-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	2620	2590	1.2	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	2620	2590	1.2	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 6507621)									
ES2510334-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	11	15	35.3	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	11	15	35.3	0% - 50%
ES2510439-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit

Page : 3 of 14
 Work Order : ES2510434
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - 6 Monthly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 6507621) - continued									
ES2510439-005	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	1140	1130	0.2	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1140	1130	0.2	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6506078)									
ES2510433-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	22	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 6506079)									
ES2510555-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2590	2580	0.0	0% - 20%
ES2510433-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	226	229	1.3	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 6517185)									
EN2505813-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	11	12	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	25	24	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.0	No Limit
ES2510338-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	14	14	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	3	3	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	18	18	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6517346)									
ES2510139-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2510681-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.014	0.014	0.0	0% - 50%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6510651)									
ES2510417-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.228	0.234	2.3	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.18	0.18	0.0	No Limit
ES2510418-006	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	13.0	12.8	1.3	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.203	0.202	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.02	1.00	1.5	0% - 20%

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 Client : ROBERT CARR & ASSOCIATES P/L
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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6510651) - continued									
ES2510418-006	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	2.02	2.00	0.9	0% - 20%
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.45	0.44	3.4	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 6515192)									
ES2510434-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.02	83.5	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6506076)									
ES2510381-013	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2510433-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6510538)									
ES2510346-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	15.1	15.3	1.6	0% - 20%
ES2510337-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	13.0	13.7	4.7	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6510540)									
ES2510346-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	4.7	4.4	8.0	No Limit
ES2510307-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6510541)									
ES2510307-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 6507371)									
ES2510434-001	US1	EP005: Total Organic Carbon	----	1	mg/L	26	27	0.0	0% - 20%
EW2501941-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	4	4	0.0	No Limit
EP074D: Fumigants (QC Lot: 6510880)									
ES2510612-002	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2510555-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6510880)									
ES2510612-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6510880) - continued									
ES2510612-002	Anonymous	EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2510555-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6510880) - continued									
ES2510555-001	Anonymous	EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 6510880)									
ES2510612-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2510555-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6510880)									
ES2510612-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit

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 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - 6 Monthly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074G: Trihalomethanes (QC Lot: 6510880) - continued									
ES2510555-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6510355)									
ES2510434-001	US1	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2510478-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6510355)									
ES2510434-001	US1	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2510478-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6510355)									
ES2510434-001	US1	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2510478-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6511823)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	94.7	83.0	129
				<5	1000 mg/L	99.3	82.0	110
				<5	842 mg/L	98.2	83.0	118
ED037P: Alkalinity by PC Titrator (QCLot: 6506535)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	104	81.0	115
				----	50 mg/L	97.8	80.0	128
ED037P: Alkalinity by PC Titrator (QCLot: 6507621)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	103	81.0	115
				----	50 mg/L	93.6	80.0	128
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6506078)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	98.3	82.0	122
				<1	500 mg/L	91.5	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 6506079)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	104	80.9	127
				<1	1000 mg/L	100	80.9	127
ED093F: Dissolved Major Cations (QCLot: 6517185)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	102	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	108	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	103	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	103	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 6517346)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.5	85.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.7	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.9	82.0	112
EG020T: Total Metals by ICP-MS (QCLot: 6510651)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.6	82.0	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.8	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.3	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.9	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.0	85.0	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.7	79.0	117



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 6510651) - continued								
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	94.4	75.0	129
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.2	85.0	117
EG050T: Total Hexavalent Chromium (QCLot: 6515192)								
EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	102	87.0	113
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6506076)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.2	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6510538)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6510540)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	96.2	69.0	123
				<0.1	2.5 mg/L	100	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6510541)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	99.3	71.3	126
				<0.01	0.5 mg/L	102	71.3	126
EP005: Total Organic Carbon (TOC) (QCLot: 6507371)								
EP005: Total Organic Carbon	----	1	mg/L	<1	10 mg/L	106	72.0	120
EP068A: Organochlorine Pesticides (OC) (QCLot: 6508331)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	87.0	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	92.1	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	95.9	69.0	117
EP068: gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	<0.5	5 µg/L	87.6	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	103	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	92.5	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	88.5	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	98.4	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.9	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	94.7	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	93.7	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	93.6	65.2	113
EP068: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	91.1	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	90.0	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	105	67.3	114
EP068: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	103	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	87.5	66.9	109



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6508331) - continued								
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	83.8	65.2	112
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	89.5	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	90.1	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	88.0	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6508331)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	91.4	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	80.3	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.8	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	81.3	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	98.3	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	105	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	90.1	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	81.6	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	81.1	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	84.1	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	80.6	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	89.4	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	95.1	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	96.3	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	85.4	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	92.7	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	103	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	83.8	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	76.1	51.6	128
EP074D: Fumigants (QCLot: 6510880)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	100	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.8	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	104	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	100	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 6510880)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	92.6	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	97.2	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	96.2	69.4	129



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 6510880) - continued								
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	94.5	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	91.8	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	100	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	102	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	97.6	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	107	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	99.2	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100.0	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	99.8	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	99.9	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	103	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	103	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	103	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	98.4	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	96.8	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	102	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	97.8	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	106	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	107	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	103	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	101	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	99.6	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6510880)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	98.6	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	100	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	98.8	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	101	61.0	125

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 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - 6 Monthly Monitoring



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074F: Halogenated Aromatic Compounds (QCLot: 6510880) - continued								
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	101	67.0	123
EP074G: Trihalomethanes (QCLot: 6510880)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.9	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	99.1	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	99.3	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	101	73.5	126
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6510355)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	92.7	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6510355)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	92.4	75.0	127
EP080: BTEXN (QCLot: 6510355)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	105	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	105	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	115	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	115	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	122	75.5	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6506078)							
ES2510433-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	116	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 6506079)							
ES2510433-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	115	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6517346)							
ES2510334-004	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	91.3	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	92.1	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6510651)							
ES2510417-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.4	70.0	130

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 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - 6 Monthly Monitoring



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6510651) - continued							
ES2510417-002	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	94.5	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	94.4	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	107	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	94.5	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	93.9	70.0	130
EG050T: Total Hexavalent Chromium (QCLot: 6515192)							
ES2510434-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.05 mg/L	93.0	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6506076)							
ES2510433-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6510538)							
ES2510337-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6510540)							
ES2510307-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	91.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6510541)							
ES2510307-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	93.1	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6507371)							
ES2510434-002	UW2	EP005: Total Organic Carbon	----	100 mg/L	108	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6510880)							
ES2510555-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	105	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	114	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6510880)							
ES2510555-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	121	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6510355)							
ES2510434-001	US1	EP080: C6 - C9 Fraction	----	325 µg/L	99.6	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6510355)							
ES2510434-001	US1	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	97.3	70.0	130
EP080: BTEXN (QCLot: 6510355)							
ES2510434-001	US1	EP080: Benzene	71-43-2	25 µg/L	102	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	109	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	112	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	117	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	117	70.0	130





QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2510434	Page	: 1 of 9
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 15579a - 6 Monthly Monitoring	Date Samples Received	: 10-Apr-2025
Site	: ----	Issue Date	: 17-Apr-2025
Sampler	: ----	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : ES2510434
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - 6 Monthly Monitoring



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ES2510337--002	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural UL1, QA		----	----	----	15-Apr-2025	12-Apr-2025	3
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Natural UL1, QA		14-Apr-2025	11-Apr-2025	3	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Natural UL1		14-Apr-2025	12-Apr-2025	2	----	----	----
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural UW2		----	----	----	11-Apr-2025	10-Apr-2025	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) US1	10-Apr-2025	----	----	----	15-Apr-2025	17-Apr-2025	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) US1, UW2, UW3	10-Apr-2025	----	----	----	11-Apr-2025	24-Apr-2025	✓
Clear Plastic Bottle - Natural (ED037-P) UL1, QA	10-Apr-2025	----	----	----	14-Apr-2025	24-Apr-2025	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) US1	10-Apr-2025	----	----	----	11-Apr-2025	08-May-2025	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) US1, UW2, UW3, UL1, QA	10-Apr-2025	----	----	----	11-Apr-2025	08-May-2025	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) US1	10-Apr-2025	----	----	----	17-Apr-2025	17-Apr-2025	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) UW2, UW3, QA	10-Apr-2025	----	----	----	17-Apr-2025	07-Oct-2025	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) US1, UL1	10-Apr-2025	15-Apr-2025	07-Oct-2025	✓	15-Apr-2025	07-Oct-2025	✓
EG050T: Total Hexavalent Chromium							
Clear Plastic Bottle - NaOH (EG050G-T) US1, UL1	10-Apr-2025	----	----	----	16-Apr-2025	08-May-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) US1, UW2, UW3, UL1, QA	10-Apr-2025	----	----	----	11-Apr-2025	12-Apr-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural (EK059G) UL1, QA	10-Apr-2025	----	----	----	15-Apr-2025	12-Apr-2025	✗
Clear Plastic Bottle - Sulfuric Acid (EK059G) US1, UW2, UW3	10-Apr-2025	----	----	----	15-Apr-2025	08-May-2025	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Natural (EK061G) UL1, QA	10-Apr-2025	14-Apr-2025	11-Apr-2025	✖	14-Apr-2025	12-May-2025	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) US1, UW2, UW3	10-Apr-2025	14-Apr-2025	08-May-2025	✓	14-Apr-2025	08-May-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Natural (EK067G) UL1	10-Apr-2025	14-Apr-2025	12-Apr-2025	✖	14-Apr-2025	12-May-2025	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) US1	10-Apr-2025	14-Apr-2025	08-May-2025	✓	14-Apr-2025	08-May-2025	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulfuric Acid (EP005) US1, UW2, UW3, UL1	10-Apr-2025	----	----	----	15-Apr-2025	08-May-2025	✓
Amber VOC Vial - Sulfuric Acid (EP005) QA	10-Apr-2025	----	----	----	15-Apr-2025	08-May-2025	✓
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025) UW2	10-Apr-2025	----	----	----	11-Apr-2025	10-Apr-2025	✖
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) UL1	10-Apr-2025	14-Apr-2025	17-Apr-2025	✓	16-Apr-2025	24-May-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) UL1	10-Apr-2025	14-Apr-2025	17-Apr-2025	✓	16-Apr-2025	24-May-2025	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK	10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK		10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) US1, TRIP BLANK, TRIP SPIKE		10-Apr-2025	15-Apr-2025	24-Apr-2025	✓	15-Apr-2025	24-Apr-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	16	18.75	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Free and Total CO2	EA165-P	WATER	In house: Referenced to APHA 4500-CO2 D. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Trivalent Chromium - Total	EG049G-T	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	WATER	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030E. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



CHAIN OF CUSTODY

ALS Laboratory: please tick →

□ Sydney: 277 Woodpark Rd, Smithfield NSW 2176
Ph: 02 8784 8555 E: samples.sydney@alsenviro.com
□ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304
Ph: 02 4968 9433 E: samples.newcastle@alsenviro.com

□ Brisbane: 32 Shand St, Stafford QLD 4053
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□ Adelaide: 2-1 Burma Rd, Pooraka SA 5095
Ph: 08 8350 0890 E: adelaide@alsenviro.com

□ Perth: 10 Hod Way, Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsenviro.com
□ Launceston: 27 Wellington St, Launceston TAS 7250
Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: RCA Australia (ROBCAR)	TURNAROUND REQUIREMENTS: ☐ Standard TAT: 7 days		FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No Frozen / frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: 3.1 °C Other comment:
OFFICE: 92 Hill Street, Carrington	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 OF: 1	
RCA Ref No: 15579a - 6 Monthly Monitoring			
PROJECT MANAGER: Fiona Brooker		CONTACT PH: 02 4902 9225 / 0408 687 529	
SAMPLER:	SAMPLER MOBILE:	RELINQUISHED BY:	RECEIVED BY: cassie
COC Emailed to ALS?	EDD FORMAT (or default):	DATE/TIME: 10/04/25	DATE/TIME: 10/04
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).																				Additional Information			
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Alkalinity	Arsenic	Boron	BTEX	Carbon Dioxide	Chloride	Chromium (III + VI)	Copper	Dissolved Oxygen	Iron	Lead	Manganese	Nitrate + Nitrite	NT01 - Cations: Major (Ca, Mg, Na, K)	Suite 12; OCP/OPP	Phosphorous (total)	Sulfate	TKN	Total Organic Carbon	Total Suspended Solids	Volatile Organic Compounds	Zinc	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	US1	10/4	W			x	x		x		x	x	x		x		x	x	x			x	x	x	x	x		x	Total metals on US1 and UL1. Filtered metals on UW2 and UW3.
2	UW2	10/4				x	x			x	x			x	x		x	x					x	x					
3	UW3	10/4				x	x			x	x				x		x	x					x	x					
4	UL1	10/4				x	x	x			x	x			x	x	x	x		x	x		x	x		x	x		
5	DUP GA	10/4				x	x				x				x		x	x						x	x				
6	TRIP BLANK	3/4/4							x																				
7	TRIP SPIKE	7 3/4							x																				
TOTAL																													

LAB OF ORIGIN:
NEWCASTLE

E-MAILED

Environmental Division
Sydney
Work Order Reference
ES2510434



Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2510434**

Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **92 HILL STREET**
CARRINGTON NSW 2294

E-mail : **fionab@rca.com.au**
Telephone : **+61 02 4902 9200**
Facsimile : **+61 02 4902 9299**

Project : **15579a - 6 Monthly Monitoring**
Order number : **----**

C-O-C number : **----**
Site : **----**
Sampler :

Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **danae.hambly@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Page : **1 of 3**
Quote number : **EN2023ROBCAR0002 (NSW Custom**
BQ 2024)
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **10-Apr-2025 16:22**
Client Requested Due : **17-Apr-2025**
Date

Issue Date : **11-Apr-2025**
Scheduled Reporting Date : **17-Apr-2025**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **1**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **3.1 - Ice present**
No. of samples received / analysed : **7 / 7**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EG049G-T Trivalent Chromium - Total	WATER - EG050G-T Total Hexavalent Chromium	WATER - EP080 BTEXN	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity	WATER - NT-04 Nitrite and Nitrate	WATER - NT-09 TKN, Total Phosphorus
ES2510434-001	10-Apr-2025 00:00	US1	✓	✓	✓	✓	✓	✓	✓
ES2510434-002	10-Apr-2025 00:00	UW2						✓	
ES2510434-003	10-Apr-2025 00:00	UW3						✓	
ES2510434-004	10-Apr-2025 00:00	UL1	✓	✓	✓			✓	✓
ES2510434-005	10-Apr-2025 00:00	QA						✓	
ES2510434-007	10-Apr-2025 00:00	TRIP SPIKE				✓			

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EA165-PH CO ₂ - Free and Total (Default)	WATER - ED037-P Alkalinity as CaCO ₃ (Auto Titrator)	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP025 Dissolved Oxygen (DO)
ES2510434-001	10-Apr-2025 00:00	US1	✓					✓	
ES2510434-002	10-Apr-2025 00:00	UW2		✓	✓	✓	✓	✓	✓
ES2510434-003	10-Apr-2025 00:00	UW3		✓	✓	✓	✓	✓	
ES2510434-004	10-Apr-2025 00:00	UL1			✓	✓		✓	
ES2510434-005	10-Apr-2025 00:00	QA			✓	✓	✓	✓	



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EK061G Total Kjeldahl Nitrogen as N (TKN) By Discrete	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - W-12 OC/OP Pesticides	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2510434-002	10-Apr-2025 00:00	UW2	✓			
ES2510434-003	10-Apr-2025 00:00	UW3	✓			
ES2510434-004	10-Apr-2025 00:00	UL1		✓	✓	
ES2510434-005	10-Apr-2025 00:00	QA	✓			
ES2510434-006	10-Apr-2025 00:00	TRIP BLANK				✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au



CERTIFICATE OF ANALYSIS

Work Order : **ES2519488**
Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **92 HILL STREET**
CARRINGTON NSW 2294
Telephone : **+61 02 4902 9200**
Project : **15579a - Quarterly Monitoring**
Order number : **----**
C-O-C number : **----**
Sampler : **Stephen Hendriksen**
Site : **----**
Quote number : **NSW Custom BQ 2024**
No. of samples received : **2**
No. of samples analysed : **2**

Page : **1 of 4**
Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**
Telephone : **+61-2-8784 8555**
Date Samples Received : **27-Jun-2025 19:30**
Date Analysis Commenced : **01-Jul-2025**
Issue Date : **04-Jul-2025 21:43**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	UW3	US1	----	----	----
Sampling date / time				26-Jun-2025 00:00	26-Jun-2025 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2519488-001	ES2519488-002	-----	-----	-----	
				Result	Result	----	----	----	
EA165: CO2 - Free and Total									
Free Carbon Dioxide as CO2	85540-96-1	1	mg/L	357	----	----	----	----	----
Total Carbon Dioxide as CO2	85540-96-1	1	mg/L	1040	----	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	779	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	779	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	550	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.047	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.033	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Chromium	7440-47-3	0.001	mg/L	----	0.011	----	----	----	----
EG049T: Total Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L	----	0.01	----	----	----	----
EG050T: Total Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.57	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	6.59	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	7.16	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	----	----	----	----	----
EP005: Total Organic Carbon (TOC)									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	UW3	US1	----	----	----
Sampling date / time					26-Jun-2025 00:00	26-Jun-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2519488-001	ES2519488-002	-----	-----	-----
					Result	Result	----	----	----
EP005: Total Organic Carbon (TOC) - Continued									
Total Organic Carbon	----	1	mg/L		25	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2519488	Page	: 1 of 5
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Danae Hambly
Address	: 92 HILL STREET CARRINGTON NSW 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Project	: 15579a - Quarterly Monitoring	Date Samples Received	: 27-Jun-2025
Order number	: ----	Date Analysis Commenced	: 01-Jul-2025
C-O-C number	: ----	Issue Date	: 04-Jul-2025
Sampler	: Stephen Hendriksen		
Site	: ----		
Quote number	: NSW Custom BQ 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 6689712)									
ES2519471-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	218	219	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	218	219	0.0	0% - 20%
ES2519707-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	74	66	10.5	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	74	66	10.5	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 6687682)									
ES2519446-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	19	20	0.0	0% - 50%
ES2519285-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	20	20	0.0	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6688766)									
ES2518915-011	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.099	0.098	1.3	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	6.25	6.25	0.0	0% - 20%
ES2518915-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.035	0.034	0.0	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.51	0.50	0.0	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6686624)									
ES2519447-001	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.0	No Limit

Page : 3 of 5
 Work Order : ES2519488
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - Quarterly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6686624) - continued									
ES2519635-001	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 6690222)									
EN2510795-002	Anonymous	EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6687681)									
ES2519446-006	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.04	0.0	No Limit
ES2519285-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6690143)									
ES2519471-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	0.0	No Limit
ES2519637-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	6.68	6.71	0.5	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6690148)									
ES2519662-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.3	0.0	No Limit
ES2519637-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (5.0)*	mg/L	568	524	8.1	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 6689651)									
ES2519434-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
ES2519488-001	UW3	EP005: Total Organic Carbon	----	1	mg/L	25	29	12.5	0% - 20%

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLOT: 6689712)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	87.4	81.0	115
				----	50 mg/L	89.4	80.0	128
ED045G: Chloride by Discrete Analyser (QCLOT: 6687682)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	108	80.9	127
				<1	1000 mg/L	100	80.9	127
EG020F: Dissolved Metals by ICP-MS (QCLOT: 6688766)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.8	85.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.4	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	90.2	82.0	112
EG020T: Total Metals by ICP-MS (QCLOT: 6686624)								
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.4	86.0	116
EG050T: Total Hexavalent Chromium (QCLOT: 6690222)								
EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	98.8	87.0	113
EK057G: Nitrite as N by Discrete Analyser (QCLOT: 6687681)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.8	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLOT: 6690143)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLOT: 6690148)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	98.9	69.0	123
				<0.1	2.5 mg/L	101	70.0	123
EP005: Total Organic Carbon (TOC) (QCLOT: 6689651)								
EP005: Total Organic Carbon	----	1	mg/L	<1	10 mg/L	103	72.0	120

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: <i>Compound</i>	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 6687682)							

Page : 5 of 5
 Work Order : ES2519488
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - Quarterly Monitoring



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 6687682) - continued							
ES2519285-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	123	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6688766)							
ES2518915-003	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	97.2	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	98.7	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6686624)							
ES2519447-002	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	101	70.0	130
EG050T: Total Hexavalent Chromium (QCLot: 6690222)							
EN2510795-002	Anonymous	EG050G-T: Hexavalent Chromium	18540-29-9	0.05 mg/L	106	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6687681)							
ES2519285-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	105	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6690143)							
ES2519637-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6690148)							
ES2519488-001	UW3	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	87.0	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6689651)							
ES2519434-003	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	115	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2519488	Page	: 1 of 7
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 15579a - Quarterly Monitoring	Date Samples Received	: 27-Jun-2025
Site	: ----	Issue Date	: 04-Jul-2025
Sampler	: Stephen Hendriksen	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.

Page : 2 of 7
 Work Order : ES2519488
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579a - Quarterly Monitoring



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ES2519637--006	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural UW3	----	----	----	01-Jul-2025	28-Jun-2025	3

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) UW3	26-Jun-2025	----	----	----	02-Jul-2025	10-Jul-2025	✔
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) UW3	26-Jun-2025	----	----	----	01-Jul-2025	24-Jul-2025	✔
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) UW3	26-Jun-2025	----	----	----	01-Jul-2025	23-Dec-2025	✔
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - NaOH (EG020A-T) US1	26-Jun-2025	01-Jul-2025	23-Dec-2025	✔	01-Jul-2025	23-Dec-2025	✔
EG050T: Total Hexavalent Chromium							
Clear Plastic Bottle - NaOH (EG050G-T) US1	26-Jun-2025	----	----	----	02-Jul-2025	24-Jul-2025	✔



Matrix: WATER		Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.					
Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) UW3	26-Jun-2025	----	----	----	01-Jul-2025	28-Jun-2025	✖
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) UW3	26-Jun-2025	----	----	----	02-Jul-2025	24-Jul-2025	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) UW3	26-Jun-2025	02-Jul-2025	24-Jul-2025	✔	03-Jul-2025	24-Jul-2025	✔
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulfuric Acid (EP005) UW3	26-Jun-2025	----	----	----	03-Jul-2025	24-Jul-2025	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	11	27.27	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: WATER		Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .					
Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Organic Carbon	EP005	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Free and Total CO2	EA165-P	WATER	In house: Referenced to APHA 4500-CO2 D. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Trivalent Chromium - Total	EG049G-T	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	WATER	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)



ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2178
 Ph 02 8764 3555 Examples.sydney@salesauto.com
☐ Newcastle: 6 Rosegum Rd, Warabrook NSW 2304
 Ph 02 4955 6433 Examples.newcastle@salesauto.com

☐ Brisbane 32 Spand St, Stafford QLD 4058
Ph: 07 3240 7222 E: samples.brisbane@alsondrc.com

☐ Townsville 1-1-15 Dasma Ct, Beale QLD 4815
Ph: 07 4796 0660 E: townsville.advice.mech@alsondrc.com

☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171
 Ph: 03 8549 8600 E: sales@melbourne@elcawire.com

☐ Perth: 10 Med Way, Miraga WA 6000
Ph: 08 3209 7655 E: samples.perth@siliconviro.com

☐ Launceston: 27 Wellington St, Launceston TAS 7250
Ph: 08 6331 2156 E: launceston@siliconviro.com

CLIENT: RCA Australia (ROBCAR)	TURNAROUND REQUIREMENTS:		☐ Standard TAT: 04/07/25		FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No N/A Freezer frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt 0.3 °C Other comment:	
OFFICE: 92 Hill Street, Carrington	ALS QUOTE NO.: EN/22/24		COC SEQUENCE NUMBER (Circle)			
RCA Ref No: 15579a - Quarterly Monitoring			COC: 1			
		OR: 1				
PROJECT MANAGER: Fiona Brooker		CONTACT PH: 02 4902 9225 / 0408 687 529				
SAMPLER: Stephen Hendriksen		SAMPLER MOBILE: 0466 571 694		RELINQUISHED BY:		
COC Emailed to ALS?		EDD FORMAT (or default):		RECEIVED BY:		
Email Reports to: administrator@rca.com.au + enviro@rca.com.au		DATE/TIME:		DATE/TIME:		
Email Invoice to: as above		26/6/25 15:10		26/06 3:20		
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:						
				27/6/25 19:30		

[illegible]

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl₂ Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air/light Unpreserved Plastic
V = VOA Vol HCl Preserved; VB = VOA Vol Sodium Bisulfate Preserved; VS = VOA Vol Sulfuric Preserved; AV = Air/light Unpreserved Vol IAG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Special bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved Bag

Environmental Division
Sydney
Work Order Reference
ES2519488



Telephone : + 61-2-8784 8555



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2519488**

Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **92 HILL STREET
CARRINGTON NSW 2294**

E-mail : **fionab@rca.com.au**
Telephone : **+61 02 4902 9200**
Facsimile : **+61 02 4902 9299**

Project : **15579a - Quarterly Monitoring**
Order number : **----**

C-O-C number : **----**
Site : **----**
Sampler : **Stephen Hendriksen**

Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **danae.hambly@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Page : **1 of 3**
Quote number : **EN2023ROBCAR0002 (NSW Custom
BQ 2024)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **27-Jun-2025 19:30**
Client Requested Due : **04-Jul-2025**
Date

Issue Date : **01-Jul-2025**
Scheduled Reporting Date : **04-Jul-2025**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **----**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **----**
No. of samples received / analysed : **2 / 2**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Metals by ICP-MS - Suite A : EG020A-T		
US1	- Clear Plastic Bottle - NaOH	- Clear Plastic Bottle - Nitric Acid; Unfiltered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA165-PH CO ₂ - Free and Total (Default)	WATER - ED037-P Alkalinity as CaCO ₃ (Auto Titrator)	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EK061G Total Kjeldahl Nitrogen as N (TKN) By Discrete	WATER - EP005 Total Organic Carbon (TOC)	WATER - NT-04 Nitrite and Nitrate
ES2519488-001	26-Jun-2025 00:00	UW3	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EG049G-T Trivalent Chromium - Total
ES2519488-002	26-Jun-2025 00:00	US1	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au



CERTIFICATE OF ANALYSIS

Work Order : **ES2528352**
Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **PO BOX 175**
CARRINGTON NSW, AUSTRALIA 2294
Telephone : **+61 02 4902 9200**
Project : **15579 - 6 Monthly Monitoring**
Order number : **----**
C-O-C number : **----**
Sampler : **Stephen Hendriksen**
Site : **----**
Quote number : **NSW Custom BQ 2024**
No. of samples received : **7**
No. of samples analysed : **7**

Page : **1 of 11**
Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**
Telephone : **+61-2-8784 8555**
Date Samples Received : **11-Sep-2025 15:15**
Date Analysis Commenced : **11-Sep-2025**
Issue Date : **17-Sep-2025 18:04**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gregory Towers	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	197	----	----	----	----
EA165: CO2 - Free and Total								
Free Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	61	454	----	----
Total Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	648	1250	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	340	667	903	655	659
Total Alkalinity as CaCO3	----	1	mg/L	340	667	903	655	659
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	17	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	82	227	537	127	126
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	44	----	----	----	----
Magnesium	7439-95-4	1	mg/L	43	----	----	----	----
Sodium	7440-23-5	1	mg/L	99	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	0.004	0.049	----	----
Manganese	7439-96-5	0.001	mg/L	----	0.008	0.036	----	----
Iron	7439-89-6	0.05	mg/L	----	<0.05	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.006	----	----	0.001	0.001
Chromium	7440-47-3	0.001	mg/L	0.009	----	----	0.002	----
Copper	7440-50-8	0.001	mg/L	0.006	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	US1	UW2	UW3	UL1	QA
Sampling date / time					11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit		ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		1.62	----	----	0.537	0.532
Zinc	7440-66-6	0.005	mg/L		0.032	----	----	0.006	----
Boron	7440-42-8	0.05	mg/L		----	----	----	0.35	----
Iron	7439-89-6	0.05	mg/L		13.6	----	----	0.37	0.35
EG049T: Total Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		<0.01	----	----	<0.01	----
EG050T: Total Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	----	----	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.12	0.10	6.28	0.61	0.62
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.4	0.9	2.5	15.1	15.7
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	----	----	0.04	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		22	12	11	32	32
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		----	9.8	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		----	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		----	----	----	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		----	----	----	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		----	----	----	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		----	----	----	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		----	----	----	<0.5	----
Aldrin	309-00-2	0.5	µg/L		----	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
trans-Chlordane	5103-74-2	0.5	µg/L	----	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L	----	----	----	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	----	----	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L	----	----	----	<0.5	----
Endrin	72-20-8	0.5	µg/L	----	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L	----	----	----	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	----	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	----	----	----	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	----	----	----	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	----	----	----	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L	----	----	----	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	----	----	----	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	----	----	----	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	----	----	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	----	----	----	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	----	----	----	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	----	----	----	<0.5	----
Diazinon	333-41-5	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	----	----	----	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	----	----	----	<2.0	----
Malathion	121-75-5	0.5	µg/L	----	----	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L	----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Chlorpyrifos	2921-88-2	0.5	µg/L	----	----	----	<0.5	----
Parathion	56-38-2	2.0	µg/L	----	----	----	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	----	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	----	----	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	----	----	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	----	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	----	----	----	<0.5	----
Ethion	563-12-2	0.5	µg/L	----	----	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	----	----	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	----	----	----	<0.5	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	----	----	----	<1	----
Toluene	108-88-3	2	µg/L	----	----	----	<2	----
Ethylbenzene	100-41-4	2	µg/L	----	----	----	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	<2	----
Styrene	100-42-5	5	µg/L	----	----	----	<5	----
ortho-Xylene	95-47-6	2	µg/L	----	----	----	<2	----
Isopropylbenzene	98-82-8	5	µg/L	----	----	----	<5	----
n-Propylbenzene	103-65-1	5	µg/L	----	----	----	<5	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	----	----	----	<5	----
sec-Butylbenzene	135-98-8	5	µg/L	----	----	----	<5	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	----	----	----	<5	----
tert-Butylbenzene	98-06-6	5	µg/L	----	----	----	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L	----	----	----	<5	----
n-Butylbenzene	104-51-8	5	µg/L	----	----	----	<5	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	----	----	----	<50	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds - Continued								
2-Butanone (MEK)	78-93-3	50	µg/L	----	----	----	<50	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	----	----	----	<50	----
2-Hexanone (MBK)	591-78-6	50	µg/L	----	----	----	<50	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	----	----	----	<5	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	----	----	----	<5	----
1,2-Dichloropropane	78-87-5	5	µg/L	----	----	----	<5	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	----	----	----	<5	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	----	----	----	<5	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	----	----	----	<5	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	----	----	----	<50	----
Chloromethane	74-87-3	50	µg/L	----	----	----	<50	----
Vinyl chloride	75-01-4	50	µg/L	----	----	----	<50	----
Bromomethane	74-83-9	50	µg/L	----	----	----	<50	----
Chloroethane	75-00-3	50	µg/L	----	----	----	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L	----	----	----	<50	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	----	----	<5	----
Iodomethane	74-88-4	5	µg/L	----	----	----	<5	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	----	----	<5	----
1,1-Dichloroethane	75-34-3	5	µg/L	----	----	----	<5	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	----	----	<5	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	----	----	<5	----
1,1-Dichloropropylene	563-58-6	5	µg/L	----	----	----	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	----	----	<5	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	----	----	<5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichloroethene	79-01-6	5	µg/L	----	----	----	<5	----
Dibromomethane	74-95-3	5	µg/L	----	----	----	<5	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	----	----	<5	----
1.3-Dichloropropane	142-28-9	5	µg/L	----	----	----	<5	----
Tetrachloroethene	127-18-4	5	µg/L	----	----	----	<5	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	----	----	<5	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	----	----	----	<5	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	----	----	----	<5	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	----	----	<5	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	----	----	----	<5	----
Pentachloroethane	76-01-7	5	µg/L	----	----	----	<5	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	----	----	----	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	----	----	<5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	----	----	<5	----
Bromobenzene	108-86-1	5	µg/L	----	----	----	<5	----
2-Chlorotoluene	95-49-8	5	µg/L	----	----	----	<5	----
4-Chlorotoluene	106-43-4	5	µg/L	----	----	----	<5	----
1.3-Dichlorobenzene	541-73-1	5	µg/L	----	----	----	<5	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	----	----	<5	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	----	----	<5	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	----	----	<5	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	----	----	----	<5	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	----	----	<5	----
Bromodichloromethane	75-27-4	5	µg/L	----	----	----	<5	----
Dibromochloromethane	124-48-1	5	µg/L	----	----	----	<5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromoform	75-25-2	5	µg/L	----	----	----	<5	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	----	----	----	<5	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	----	----	----	75.6	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	----	----	----	90.7	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	----	----	----	111	----
Toluene-D8	2037-26-5	5	%	----	----	----	110	----
4-Bromofluorobenzene	460-00-4	5	%	----	----	----	100	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	123	----	----	----	----
Toluene-D8	2037-26-5	2	%	105	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	94.2	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				TRIP BLANK	TRIP SPIKE	----	----	----
Sampling date / time				04-Sep-2025 00:00	04-Sep-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2528352-006	ES2528352-007	-----	-----	-----
				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	18	----	----	----
Toluene	108-88-3	2	µg/L	<2	15	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	15	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	15	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	16	----	----	----
^ Total Xylenes	----	2	µg/L	<2	31	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	79	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	18	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	112	114	----	----	----
Toluene-D8	2037-26-5	2	%	95.4	99.2	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	87.2	91.7	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(WATER) ED037P: Alkalinity by PC Titrator



QUALITY CONTROL REPORT

Work Order	: ES2528352	Page	: 1 of 15
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Danae Hambly
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Project	: 15579 - 6 Monthly Monitoring	Date Samples Received	: 11-Sep-2025
Order number	: ----	Date Analysis Commenced	: 11-Sep-2025
C-O-C number	: ----	Issue Date	: 17-Sep-2025
Sampler	: Stephen Hendriksen		
Site	: ----		
Quote number	: NSW Custom BQ 2024		
No. of samples received	: 7		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gregory Towers	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6862649)									
ED2501270-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2528217-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2528413-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	54	59	9.3	0% - 50%
ES2528611-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	14	12	19.6	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 6857432)									
ES2528352-001	US1	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	340	359	5.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	340	359	5.6	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6855252)									
ES2528322-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	41	43	5.3	0% - 20%
ES2528322-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	52	53	1.9	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 6855251)									
ES2528072-011	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	17	17	0.0	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 6859626)									
ES2528298-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	24	24	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	8	8	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	143	143	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	18	18	0.0	0% - 50%
ES2528322-009	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	86	86	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	52	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	91	91	0.0	0% - 20%

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED093F: Dissolved Major Cations (QC Lot: 6859626) - continued									
ES2528322-009	Anonymous	ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6859619)									
ES2528393-009	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2528075-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6859576)									
ES2528349-003	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.921	0.935	1.5	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.046	0.050	8.8	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.90	0.94	4.1	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.28	0.29	0.0	No Limit
ES2528349-013	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.644	0.648	0.6	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.045	0.044	3.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.17	0.18	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.24	0.29	18.2	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 6858813)									
ES2528352-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6855122)									
ES2528354-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2528354-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6855115)									
ES2528339-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EW2504594-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.8	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6855116)									
ES2528339-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.01	0.02	0.0	No Limit
EW2504594-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.10	0.07	32.6	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 6855308)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP005: Total Organic Carbon (TOC) (QC Lot: 6855308) - continued									
ES2528240-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	2	2	0.0	No Limit
ES2528385-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	5	4	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074B: Oxygenated Compounds (QC Lot: 6857691) - continued									
ES2528533-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6857691) - continued									
ES2528399-001	Anonymous	EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2528533-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6857690)									
ES2528399-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2528533-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6857690)									
ES2528399-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2528533-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6857690)									

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 Work Order : ES2528352
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579 - 6 Monthly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 6857690) - continued									
ES2528399-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES2528533-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6862649)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	104	83.0	129
				<5	1000 mg/L	99.4	82.0	110
				<5	816 mg/L	103	83.0	118
ED037P: Alkalinity by PC Titrator (QCLot: 6857432)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	20 mg/L	102	80.0	120
				----	200 mg/L	100	90.0	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6855252)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	100	82.0	122
				<1	500 mg/L	90.9	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 6855251)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	107	80.9	127
				<1	1000 mg/L	99.0	80.9	127
ED093F: Dissolved Major Cations (QCLot: 6859626)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.3	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	109	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	105	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.8	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 6859619)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.9	85.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.0	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.0	82.0	112
EG020T: Total Metals by ICP-MS (QCLot: 6859576)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.2	82.0	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.0	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.2	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.0	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	85.0	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.8	79.0	117
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	92.6	75.0	129
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	100	85.0	117

EP068B: Organophosphorus Pesticides (OP) (QCLot: 6855408)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6855408) - continued								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	74.3	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.8	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.2	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	79.6	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	95.7	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	92.1	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	86.2	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	91.6	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	91.5	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	95.8	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	98.8	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	89.9	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	91.5	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	91.9	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	95.2	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	95.0	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	91.8	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	96.0	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	108	51.6	128
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6857691)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	101	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	101	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	101	69.0	119
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	101	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	102	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	100	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	102	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	102	65.0	123



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074B: Oxygenated Compounds (QCLot: 6857691)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	104	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	95.8	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	103	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	98.8	65.0	137
EP074C: Sulfonated Compounds (QCLot: 6857691)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	100	72.8	127
EP074D: Fumigants (QCLot: 6857691)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	100	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	104	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	101	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	101	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	99.1	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	102	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	99.2	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	104	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	99.7	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	101	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	97.6	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	102	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	103	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	103	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	102	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	97.7	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	104	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	102	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	103	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	105	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	102	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	101	66.0	114



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691) - continued								
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	103	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	103	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	99.1	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	103	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	98.4	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6857691)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	103	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	104	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	101	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	103	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	104	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	102	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	104	67.0	123
EP074G: Trihalomethanes (QCLot: 6857691)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	102	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	100	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	100	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	97.5	73.5	126
EP074H: Naphthalene (QCLot: 6857691)								
EP074: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	107	72.0	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6857690)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	99.2	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6857690)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75.0	127
EP080: BTEXN (QCLot: 6857690)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	85.0	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	88.6	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	89.6	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	82.4	73.0	122



Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 6857690) - continued								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.4	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	86.0	75.5	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6855252)							
ES2528322-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 6855251)							
ES2528072-011	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	112	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6859619)							
ES2528075-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	122	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	128	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6859576)							
ES2528349-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.9	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	96.6	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	104	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	104	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.3	70.0	130
EG050T: Total Hexavalent Chromium (QCLot: 6858813)							
ES2528352-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.05 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6855122)							
ES2528354-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	112	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6855115)							
ES2528341-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	95.9	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6855116)							
ES2528341-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	81.1	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6855308)							
ES2528339-001	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	116	70.0	130

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 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579 - 6 Monthly Monitoring



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: Benzene	71-43-2	25 µg/L	108	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	104	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	108	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	105	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	112	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	80.7	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	77.4	70.0	130
EP080: BTEXN (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	101	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	91.9	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.3	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	94.6	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	96.0	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	94.7	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2528352	Page	: 1 of 9
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 15579 - 6 Monthly Monitoring	Date Samples Received	: 11-Sep-2025
Site	: ----	Issue Date	: 17-Sep-2025
Sampler	: Stephen Hendriksen	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579 - 6 Monthly Monitoring



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	ES2528322--001	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural UW2	----	----	----	12-Sep-2025	11-Sep-2025	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Method	Count		Rate (%)		Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) US1	11-Sep-2025	----	----	----	16-Sep-2025	18-Sep-2025	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) US1, UW3, QA UW2, UL1,	11-Sep-2025	----	----	----	11-Sep-2025	25-Sep-2025	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) US1	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) US1, UW3, QA UW2, UL1,	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) US1	11-Sep-2025	----	----	----	16-Sep-2025	18-Sep-2025	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) UW2, UW3	11-Sep-2025	----	----	----	16-Sep-2025	10-Mar-2026	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) US1, QA UL1,	11-Sep-2025	15-Sep-2025	10-Mar-2026	✓	15-Sep-2025	10-Mar-2026	✓
EG050T: Total Hexavalent Chromium							
Clear Plastic Bottle - NaOH (EG050G-T) US1, UL1	11-Sep-2025	----	----	----	13-Sep-2025	09-Oct-2025	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) US1, UW3, QA UW2, UL1,	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) US1, UW3, QA UW2, UL1,	11-Sep-2025	12-Sep-2025	09-Oct-2025	✓	12-Sep-2025	09-Oct-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) US1, UL1	11-Sep-2025	12-Sep-2025	09-Oct-2025	✓	12-Sep-2025	09-Oct-2025	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) US1, UW3, QA	UW2, UL1,	11-Sep-2025	----	----	----	15-Sep-2025	09-Oct-2025	✓
EP025: Oxygen - Dissolved (DO)								
Clear Plastic Bottle - Natural (EP025) UW2		11-Sep-2025	----	----	----	12-Sep-2025	11-Sep-2025	✗
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068) UL1		11-Sep-2025	12-Sep-2025	18-Sep-2025	✓	15-Sep-2025	22-Oct-2025	✓
EP068B: Organophosphorus Pesticides (OP)								
Amber Glass Bottle - Unpreserved (EP068) UL1		11-Sep-2025	12-Sep-2025	18-Sep-2025	✓	15-Sep-2025	22-Oct-2025	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074) UL1		11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK		04-Sep-2025	15-Sep-2025	18-Sep-2025	✓	16-Sep-2025	18-Sep-2025	✓



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK	04-Sep-2025	15-Sep-2025	18-Sep-2025	✓	16-Sep-2025	18-Sep-2025	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK, TRIP SPIKE	04-Sep-2025	15-Sep-2025	18-Sep-2025	✓	16-Sep-2025	18-Sep-2025	✓
Amber VOC Vial - Sulfuric Acid (EP080) US1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	17	17.65	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Free and Total CO2	EA165-P	WATER	In house: Referenced to APHA 4500-CO2 D. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. Auto Titrator) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Trivalent Chromium - Total	EG049G-T	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	WATER	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



CHAIN OF CUSTODY

ALS Laboratory: please tick ☐

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176
Ph: 02 8784 8555 E: samples.sydney@alsenviro.com
☐ Newcastle: 6 Rosagum Rd, Warabrook NSW 2304
Ph: 02 4968 9433 E: samples.newcastle@alsenviro.com

☐ Brisbane: 32 Shand St, Stefford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Deema Ct, Bohle QLD 4818
Ph: 07 4736 0690 E: townsville.environmental@alsenviro.com

☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171
Ph: 03 8549 0600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095
Ph: 08 8359 0690 E: adelaide@alsenviro.com

☐ Perth: 10 Hod Way, Malaga WA 6000
Ph: 08 9209 7656 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250
Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: RCA Australia (ROBCAR)	TURNAROUND REQUIREMENTS: ☐ Standard TAT : 19/09/25 - 7 Days		FOR LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes ☒ No ☐ N/A ☒ Free ice / frozen ice bricks present upon receipt? Yes ☒ No ☐ N/A ☒ Random Sample Temperature on Receipt: 7.4 °C Other comment:	
OFFICE: 92 Hill Street, Carrington				
RCA Ref No: 15579 - 6 Monthly Monitoring	ALS QUOTE NO.: EN/222/24	COC SEQUENCE NUMBER (Circle)		
COC: 1 OF: 1				
PROJECT MANAGER: Fiona Brooker	CONTACT PH: 02 4902 9225 / 0408 687 529	RECEIVED BY: SA		RECEIVED BY: L.D
SAMPLER: Stephen Hendriksen	SAMPLER MOBILE: 0466 571 694	RELINQUISHED BY: S. Hendriksen	DATE/TIME: 11/09	DATE/TIME: 11-09-25
COC Emailed to ALS?	EDD FORMAT (or default):	DATE/TIME: 11/9/25 15:13	DATE/TIME: 1700	DATE/TIME: 3:15
Email Reports to: administrator@rca.com.au + enviro@rca.com.au				
Email Invoice to: as above				

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).																				Additional Information																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>(refer to codes below)</i>	TOTAL BOTTLES	Alkalinity	Arsenic	Boron	BTEX	Carbon Dioxide	Chloride	Chromium (III + VI)	Copper	Dissolved Oxygen	Iron	Lead	Manganese	Nitrate + Nitrite	NT01 - Cations: Major (Ca, Mg, Na, K)	Suite 12: OCP/OPP	Phosphorous (total)	Sulfate	TKN	Total Organic Carbon	Total Suspended Solids	Volatile Organic Compounds	Zinc																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

E-MAILED

LAB OF ORIGIN:
NEWCASTLEEnvironmental Division
Sydney
Work Order Reference
ES2528352

Telephone : + 61-2-8784 8555



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2528352**

Amendment : **1**

Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **PO BOX 175**
CARRINGTON NSW, AUSTRALIA 2294

Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **fionab@rca.com.au**
Telephone : **+61 02 4902 9200**
Facsimile : **+61 02 4902 9299**

E-mail : **danae.hambly@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **15579 - 6 Monthly Monitoring**
Order number : **----**

Page : **1 of 3**
Quote number : **EN2023ROBCAR0002 (NSW Custom**
BQ 2024)

C-O-C number : **----**

QC Level : **NEPM 2013 B3 & ALS QC Standard**

Site : **----**

Sampler : **Stephen Hendriksen**

Dates

Date Samples Received : **11-Sep-2025 15:15**
Client Requested Due : **26-Sep-2025**
Date

Issue Date : **19-Sep-2025**
Scheduled Reporting Date : **26-Sep-2025**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **----**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **7.4°C - Ice present**
No. of samples received / analysed : **7 / 7**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- [19/09/2025] This is an updated SRN which indicates the new scheduled release date for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Laboratory sample ID	Sampling date / time	Sample ID
----------------------	----------------------	-----------

ES2528352-001	11-Sep-2025 07:55	US1	✓	✓	✓	✓	✓	✓	✓
ES2528352-002	11-Sep-2025 07:33	UW2	✓	✓					✓
ES2528352-003	11-Sep-2025 10:15	UW3	✓	✓					✓
ES2528352-004	11-Sep-2025 08:30	UL1	✓	✓	✓	✓	✓		✓
ES2528352-005	11-Sep-2025 00:00	QA	✓	✓	✓				✓
ES2528352-007	04-Sep-2025 00:00	TRIP SPIKE						✓	

Laboratory sample ID	Sampling date / time	Sample ID
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ES2528352-001	11-Sep-2025 07:55	US1	✓	✓	✓	✓	✓	✓	✓
ES2528352-002	11-Sep-2025 07:33	UW2			✓	✓	✓	✓	
ES2528352-003	11-Sep-2025 10:15	UW3			✓	✓	✓	✓	
ES2528352-004	11-Sep-2025 08:30	UL1			✓	✓	✓	✓	
ES2528352-005	11-Sep-2025 00:00	QA			✓	✓	✓	✓	



Matrix: WATER			WATER - EA165-PH CO2 - Free and Total (Default)	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EK067G Total Phosphorus as P By Discrete Analyser	WATER - EP025 Dissolved Oxygen (DO)	WATER - EP074 (water) Volatile Organic Compounds	WATER - W-12 OC/OP Pesticides	WATER - W-18 TRH(C6 - C9)/BTEXN
Laboratory sample ID	Sampling date / time	Sample ID							
ES2528352-001	11-Sep-2025 07:55	US1			✓				
ES2528352-002	11-Sep-2025 07:33	UW2	✓	✓		✓			
ES2528352-003	11-Sep-2025 10:15	UW3	✓	✓					
ES2528352-004	11-Sep-2025 08:30	UL1			✓		✓	✓	
ES2528352-006	04-Sep-2025 00:00	TRIP BLANK							✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(WATER) ED037P: Alkalinity by PC Titrator



CERTIFICATE OF ANALYSIS

Work Order	: ES2528352	Page	: 1 of 12
Amendment	: 1		
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Danae Hambly
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Project	: 15579 - 6 Monthly Monitoring	Date Samples Received	: 11-Sep-2025 15:15
Order number	: ----	Date Analysis Commenced	: 11-Sep-2025
C-O-C number	: ----	Issue Date	: 24-Sep-2025 10:55
Sampler	: Stephen Hendriksen		
Site	: ----		
Quote number	: NSW Custom BQ 2024		
No. of samples received	: 7		
No. of samples analysed	: 7		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gregory Towers	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- Amendment (19/09/2025): This report has been amended following the addition of Nitrate & Nitrite & Total Nitrogen for samples 001-005
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	197	----	----	----	----
EA165: CO2 - Free and Total								
Free Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	61	454	----	----
Total Carbon Dioxide as CO2	85540-96-1	1	mg/L	----	648	1250	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	340	667	903	655	659
Total Alkalinity as CaCO3	----	1	mg/L	340	667	903	655	659
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	17	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	82	227	537	127	126
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	44	----	----	----	----
Magnesium	7439-95-4	1	mg/L	43	----	----	----	----
Sodium	7440-23-5	1	mg/L	99	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	0.004	0.049	----	----
Manganese	7439-96-5	0.001	mg/L	----	0.008	0.036	----	----
Iron	7439-89-6	0.05	mg/L	----	<0.05	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.006	----	----	0.001	0.001
Chromium	7440-47-3	0.001	mg/L	0.009	----	----	0.002	----
Copper	7440-50-8	0.001	mg/L	0.006	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	1.62	----	----	0.537	0.532
Zinc	7440-66-6	0.005	mg/L	0.032	----	----	0.006	----
Boron	7440-42-8	0.05	mg/L	----	----	----	0.35	----
Iron	7439-89-6	0.05	mg/L	13.6	----	----	0.37	0.35
EG049T: Total Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	----	----	<0.01	----
EG050T: Total Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	----	<0.01	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.61	0.15	0.14
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.11	0.09	5.67	0.46	0.48
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	0.10	6.28	0.61	0.62
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	0.9	2.5	15.1	15.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
[^] Total Nitrogen as N	----	0.1	mg/L	1.5	1.0	8.8	15.7	16.3
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.18	----	----	0.04	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	22	12	11	32	32
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	----	9.8	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	----	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	----	----	----	<0.5	----
beta-BHC	319-85-7	0.5	µg/L	----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	----	----	----	<0.5	----
delta-BHC	319-86-8	0.5	µg/L	----	----	----	<0.5	----
Heptachlor	76-44-8	0.5	µg/L	----	----	----	<0.5	----
Aldrin	309-00-2	0.5	µg/L	----	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	----	----	----	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L	----	----	----	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	----	----	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L	----	----	----	<0.5	----
Endrin	72-20-8	0.5	µg/L	----	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L	----	----	----	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	----	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	----	----	----	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	----	----	----	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	----	----	----	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	----	----	----	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L	----	----	----	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	----	----	----	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	----	----	----	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	----	----	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	----	----	----	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	----	----	----	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	----	----	----	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Diazinon	333-41-5	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	----	----	----	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	----	----	----	<2.0	----
Malathion	121-75-5	0.5	µg/L	----	----	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L	----	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	----	----	----	<0.5	----
Parathion	56-38-2	2.0	µg/L	----	----	----	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	----	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	----	----	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	----	----	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	----	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	----	----	----	<0.5	----
Ethion	563-12-2	0.5	µg/L	----	----	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	----	----	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	----	----	----	<0.5	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	----	----	----	<1	----
Toluene	108-88-3	2	µg/L	----	----	----	<2	----
Ethylbenzene	100-41-4	2	µg/L	----	----	----	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	<2	----
Styrene	100-42-5	5	µg/L	----	----	----	<5	----
ortho-Xylene	95-47-6	2	µg/L	----	----	----	<2	----
Isopropylbenzene	98-82-8	5	µg/L	----	----	----	<5	----
n-Propylbenzene	103-65-1	5	µg/L	----	----	----	<5	----
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	----	----	----	<5	----
sec-Butylbenzene	135-98-8	5	µg/L	----	----	----	<5	----
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	----	----	----	<5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
tert-Butylbenzene	98-06-6	5	µg/L	----	----	----	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L	----	----	----	<5	----
n-Butylbenzene	104-51-8	5	µg/L	----	----	----	<5	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	----	----	----	<50	----
2-Butanone (MEK)	78-93-3	50	µg/L	----	----	----	<50	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	----	----	----	<50	----
2-Hexanone (MBK)	591-78-6	50	µg/L	----	----	----	<50	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	----	----	----	<5	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	----	----	----	<5	----
1,2-Dichloropropane	78-87-5	5	µg/L	----	----	----	<5	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	----	----	----	<5	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	----	----	----	<5	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	----	----	----	<5	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	----	----	----	<50	----
Chloromethane	74-87-3	50	µg/L	----	----	----	<50	----
Vinyl chloride	75-01-4	50	µg/L	----	----	----	<50	----
Bromomethane	74-83-9	50	µg/L	----	----	----	<50	----
Chloroethane	75-00-3	50	µg/L	----	----	----	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L	----	----	----	<50	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	----	----	<5	----
Iodomethane	74-88-4	5	µg/L	----	----	----	<5	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	----	----	<5	----
1,1-Dichloroethane	75-34-3	5	µg/L	----	----	----	<5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				US1	UW2	UW3	UL1	QA
Sampling date / time				11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	----	----	<5	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	----	----	<5	----
1,1-Dichloropropylene	563-58-6	5	µg/L	----	----	----	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	----	----	<5	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	----	----	<5	----
Trichloroethene	79-01-6	5	µg/L	----	----	----	<5	----
Dibromomethane	74-95-3	5	µg/L	----	----	----	<5	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	----	----	----	<5	----
1,3-Dichloropropane	142-28-9	5	µg/L	----	----	----	<5	----
Tetrachloroethene	127-18-4	5	µg/L	----	----	----	<5	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	----	----	----	<5	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	----	----	----	<5	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	----	----	----	<5	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	----	----	----	<5	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	----	----	----	<5	----
Pentachloroethane	76-01-7	5	µg/L	----	----	----	<5	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	----	----	----	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	----	----	<5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	----	----	<5	----
Bromobenzene	108-86-1	5	µg/L	----	----	----	<5	----
2-Chlorotoluene	95-49-8	5	µg/L	----	----	----	<5	----
4-Chlorotoluene	106-43-4	5	µg/L	----	----	----	<5	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	----	----	----	<5	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	----	----	----	<5	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	----	----	----	<5	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	----	----	----	<5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	US1	UW2	UW3	UL1	QA
Sampling date / time					11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit		ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005
					Result	Result	Result	Result	Result
EP074F: Halogenated Aromatic Compounds - Continued									
1,2,3-Trichlorobenzene	87-61-6	5	µg/L		----	----	----	<5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	----	----	<5	----
Bromodichloromethane	75-27-4	5	µg/L		----	----	----	<5	----
Dibromochloromethane	124-48-1	5	µg/L		----	----	----	<5	----
Bromoform	75-25-2	5	µg/L		----	----	----	<5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	----	----	<5	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		----	----	----	75.6	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		----	----	----	90.7	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	----	----	111	----
Toluene-D8	2037-26-5	5	%		----	----	----	110	----
4-Bromofluorobenzene	460-00-4	5	%		----	----	----	100	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		123	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	US1	UW2	UW3	UL1	QA
Sampling date / time					11-Sep-2025 07:55	11-Sep-2025 07:33	11-Sep-2025 10:15	11-Sep-2025 08:30	11-Sep-2025 00:00
Compound	CAS Number	LOR	Unit	ES2528352-001	ES2528352-002	ES2528352-003	ES2528352-004	ES2528352-005	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%	105	----	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	94.2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TRIP BLANK	TRIP SPIKE	----	----	----
Sampling date / time					04-Sep-2025 00:00	04-Sep-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2528352-006	ES2528352-007	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	18	----	----	----
Toluene	108-88-3	2	µg/L		<2	15	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	15	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	15	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	16	----	----	----
^ Total Xylenes	----	2	µg/L		<2	31	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	79	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	18	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		112	114	----	----	----
Toluene-D8	2037-26-5	2	%		95.4	99.2	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		87.2	91.7	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(WATER) ED037P: Alkalinity by PC Titrator



QUALITY CONTROL REPORT

Work Order : **ES2528352**

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Amendment : **1**

Client : **ROBERT CARR & ASSOCIATES P/L**

Contact : **MS FIONA BROOKER**

Address : **PO BOX 175
CARRINGTON NSW, AUSTRALIA 2294**

Telephone : **+61 02 4902 9200**

Project : **15579 - 6 Monthly Monitoring**

Order number : **----**

C-O-C number : **----**

Sampler : **Stephen Hendriksen**

Site : **----**

Quote number : **NSW Custom BQ 2024**

No. of samples received : **7**

No. of samples analysed : **7**

Laboratory : **Environmental Division Sydney**

Contact : **Danae Hambly**

Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

Telephone : **+61-2-8784 8555**

Date Samples Received : **11-Sep-2025**

Date Analysis Commenced : **11-Sep-2025**

Issue Date : **24-Sep-2025**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gregory Towers	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6862649)									
ED2501270-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2528217-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2528413-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	54	59	9.3	0% - 50%
ES2528611-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	14	12	19.6	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 6857432)									
ES2528352-001	US1	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	340	359	5.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	340	359	5.6	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6855252)									
ES2528322-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	41	43	5.3	0% - 20%
ES2528322-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	52	53	1.9	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 6855251)									
ES2528072-011	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	17	17	0.0	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 6859626)									
ES2528298-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	24	24	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	8	8	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	143	143	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	18	18	0.0	0% - 50%
ES2528322-009	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	86	86	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	52	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	91	91	0.0	0% - 20%

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED093F: Dissolved Major Cations (QC Lot: 6859626) - continued									
ES2528322-009	Anonymous	ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6859619)									
ES2528393-009	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2528075-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6859576)									
ES2528349-003	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.921	0.935	1.5	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.046	0.050	8.8	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.90	0.94	4.1	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.28	0.29	0.0	No Limit
ES2528349-013	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.644	0.648	0.6	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.045	0.044	3.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.17	0.18	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.24	0.29	18.2	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 6858813)									
ES2528352-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6874699)									
ES2528352-001	US1	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.02	0.0	No Limit
ES2529363-015	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6855122)									
ES2528354-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2528354-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6855115)									
ES2528339-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.0	No Limit
EW2504594-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.8	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6855116)									

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 Work Order : ES2528352 Amendment 1
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579 - 6 Monthly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6855116) - continued									
ES2528339-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.01	0.02	0.0	No Limit
EW2504594-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.10	0.07	32.6	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 6855308)									
ES2528240-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	2	2	0.0	No Limit
ES2528385-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	5	4	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074B: Oxygenated Compounds (QC Lot: 6857691) - continued									
ES2528399-001	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES2528533-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6857691) - continued									
ES2528399-001	Anonymous	EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2528533-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6857691) - continued									
ES2528533-001	Anonymous	EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 6857691)									
ES2528399-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2528533-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6857690)									
ES2528399-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2528533-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit

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 Work Order : ES2528352 Amendment 1
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15579 - 6 Monthly Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6857690)									
ES2528399-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2528533-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6857690)									
ES2528399-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES2528533-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6862649)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	104	83.0	129
				<5	1000 mg/L	99.4	82.0	110
				<5	816 mg/L	103	83.0	118
ED037P: Alkalinity by PC Titrator (QCLot: 6857432)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	20 mg/L	102	80.0	120
				----	200 mg/L	100	90.0	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6855252)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	100	82.0	122
				<1	500 mg/L	90.9	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 6855251)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	107	80.9	127
				<1	1000 mg/L	99.0	80.9	127
ED093F: Dissolved Major Cations (QCLot: 6859626)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.3	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	109	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	105	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.8	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 6859619)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.9	85.0	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.0	82.0	110
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.0	82.0	112
EG020T: Total Metals by ICP-MS (QCLot: 6859576)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.2	82.0	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.0	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.2	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.0	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	85.0	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.8	79.0	117
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	92.6	75.0	129
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	100	85.0	117



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EG050T: Total Hexavalent Chromium (QCLot: 6858813)								
EG050G-T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	104	87.0	113
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6874699)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.9	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6855122)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6855115)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	87.4	69.0	123
				<0.1	2.5 mg/L	87.6	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6855116)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	104	71.3	126
				<0.01	0.5 mg/L	92.1	71.3	126
EP005: Total Organic Carbon (TOC) (QCLot: 6855308)								
EP005: Total Organic Carbon	----	1	mg/L	<1	10 mg/L	109	72.0	120
EP068A: Organochlorine Pesticides (OC) (QCLot: 6855408)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	82.1	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	81.0	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	96.2	69.0	117
EP068: gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	<0.5	5 µg/L	90.2	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	99.6	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	85.8	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	88.9	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	91.3	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	90.8	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	96.2	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.5	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	93.5	65.2	113
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	95.5	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	88.7	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	100	67.3	114
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	96.6	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	90.4	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	93.2	65.2	112
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	91.9	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	103	63.8	110



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6855408) - continued								
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	90.0	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6855408)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	74.3	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.8	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.2	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	79.6	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	95.7	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	92.1	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	86.2	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	91.6	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	91.5	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	95.8	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	98.8	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	89.9	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	91.5	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	91.9	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	95.2	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	95.0	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	91.8	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	96.0	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	108	51.6	128
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6857691)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	101	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	101	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	101	69.0	119
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	101	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	102	74.0	116



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6857691) - continued								
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	100	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	102	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	102	65.0	123
EP074B: Oxygenated Compounds (QCLot: 6857691)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	104	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	95.8	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	103	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	98.8	65.0	137
EP074C: Sulfonated Compounds (QCLot: 6857691)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	100	72.8	127
EP074D: Fumigants (QCLot: 6857691)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	100	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	104	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	101	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	101	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	99.1	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	102	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	99.2	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	104	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	99.7	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	101	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	97.6	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	102	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	103	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	103	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	102	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	97.7	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	104	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	102	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	102	73.0	119



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691) - continued								
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	103	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	105	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	102	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	101	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	103	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	103	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	99.1	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	103	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	98.4	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6857691)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	103	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	104	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	101	75.0	117
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	103	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	104	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	102	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	104	67.0	123
EP074G: Trihalomethanes (QCLot: 6857691)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	102	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	100	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	100	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	97.5	73.5	126
EP074H: Naphthalene (QCLot: 6857691)								
EP074: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	107	72.0	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6857690)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	99.2	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6857690)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75.0	127
EP080: BTEXN (QCLot: 6857690)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	85.0	68.3	119

Matrix Spike (MS) Report

Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6855252)							
ES2528322-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 6855251)							
ES2528072-011	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	112	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 6859619)							
ES2528075-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	122	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	128	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6859576)							
ES2528349-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.9	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	96.6	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	104	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	104	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.3	70.0	130
EG050T: Total Hexavalent Chromium (QCLot: 6858813)							
ES2528352-001	US1	EG050G-T: Hexavalent Chromium	18540-29-9	0.05 mg/L	102	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6874699)							
ES2528352-001	US1	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6855122)							
ES2528354-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	112	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6855115)							

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 Project : 15579 - 6 Monthly Monitoring



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6855115) - continued							
ES2528341-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	95.9	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6855116)							
ES2528341-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	81.1	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6855308)							
ES2528339-001	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	116	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: Benzene	71-43-2	25 µg/L	108	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	104	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	108	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	105	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6857691)							
ES2528399-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	112	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	80.7	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	77.4	70.0	130
EP080: BTEXN (QCLot: 6857690)							
ES2528399-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	101	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	91.9	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.3	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	94.6	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	96.0	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	94.7	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

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Amendment : 1

Client : ROBERT CARR & ASSOCIATES P/L

Contact : MS FIONA BROOKER

Project : 15579 - 6 Monthly Monitoring

Site : ----

Sampler : Stephen Hendriksen

Order number : ----

Laboratory : Environmental Division Sydney

Telephone : +61-2-8784 8555

Date Samples Received : 11-Sep-2025

Issue Date : 24-Sep-2025

No. of samples received : 7

No. of samples analysed : 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	ES2528322--001	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
US1, UW3, QA	UW2, UL1,	----	----	----	23-Sep-2025	13-Sep-2025	10
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural							
UW2		----	----	----	12-Sep-2025	11-Sep-2025	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Pesticides by GCMS	EP068	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Pesticides by GCMS	EP068	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) US1	11-Sep-2025	----	----	----	16-Sep-2025	18-Sep-2025	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) US1, UW2, UW3, UL1, QA	11-Sep-2025	----	----	----	11-Sep-2025	25-Sep-2025	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) US1	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) US1, UW2, UW3, UL1, QA	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) US1	11-Sep-2025	----	----	----	16-Sep-2025	18-Sep-2025	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) UW2, UW3	11-Sep-2025	----	----	----	16-Sep-2025	10-Mar-2026	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) US1, UL1, QA	11-Sep-2025	15-Sep-2025	10-Mar-2026	✓	15-Sep-2025	10-Mar-2026	✓
EG050T: Total Hexavalent Chromium							
Clear Plastic Bottle - NaOH (EG050G-T) US1, UL1	11-Sep-2025	----	----	----	13-Sep-2025	09-Oct-2025	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) US1, UW2, UW3, UL1, QA	11-Sep-2025	----	----	----	23-Sep-2025	13-Sep-2025	✗
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) US1, UW2, UW3, UL1, QA	11-Sep-2025	----	----	----	12-Sep-2025	09-Oct-2025	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) US1, UW3, QA UW2, UL1,	11-Sep-2025	12-Sep-2025	09-Oct-2025	✓	12-Sep-2025	09-Oct-2025	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) US1, UL1	11-Sep-2025	12-Sep-2025	09-Oct-2025	✓	12-Sep-2025	09-Oct-2025	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulfuric Acid (EP005) US1, UW3, QA UW2, UL1,	11-Sep-2025	----	----	----	15-Sep-2025	09-Oct-2025	✓
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025) UW2	11-Sep-2025	----	----	----	12-Sep-2025	11-Sep-2025	✗
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) UL1	11-Sep-2025	12-Sep-2025	18-Sep-2025	✓	15-Sep-2025	22-Oct-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) UL1	11-Sep-2025	12-Sep-2025	18-Sep-2025	✓	15-Sep-2025	22-Oct-2025	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✓	16-Sep-2025	25-Sep-2025	✓



Matrix: WATER				Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.			
Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✔	16-Sep-2025	25-Sep-2025	✔
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074) UL1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✔	16-Sep-2025	25-Sep-2025	✔
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK	04-Sep-2025	15-Sep-2025	18-Sep-2025	✔	16-Sep-2025	18-Sep-2025	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK	04-Sep-2025	15-Sep-2025	18-Sep-2025	✔	16-Sep-2025	18-Sep-2025	✔
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TRIP BLANK, TRIP SPIKE	04-Sep-2025	15-Sep-2025	18-Sep-2025	✔	16-Sep-2025	18-Sep-2025	✔
Amber VOC Vial - Sulfuric Acid (EP080) US1	11-Sep-2025	15-Sep-2025	25-Sep-2025	✔	16-Sep-2025	25-Sep-2025	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	17	17.65	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Free and Total CO2	EA165-P	WATER	In house: Referenced to APHA 4500-CO2 D. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. Auto Titrator) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Trivalent Chromium - Total	EG049G-T	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	WATER	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2528352**

Amendment : **1**

Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : **MS FIONA BROOKER**
Address : **PO BOX 175**
CARRINGTON NSW, AUSTRALIA 2294

Laboratory : **Environmental Division Sydney**
Contact : **Danae Hambly**
Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **fionab@rca.com.au**
Telephone : **+61 02 4902 9200**
Facsimile : **+61 02 4902 9299**

E-mail : **danae.hambly@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **15579 - 6 Monthly Monitoring**
Order number : **----**

Page : **1 of 3**
Quote number : **EN2023ROBCAR0002 (NSW Custom**
BQ 2024)

C-O-C number : **----**

QC Level : **NEPM 2013 B3 & ALS QC Standard**

Site : **----**

Sampler : **Stephen Hendriksen**

Dates

Date Samples Received : **11-Sep-2025 15:15**
Client Requested Due : **26-Sep-2025**
Date

Issue Date : **19-Sep-2025**
Scheduled Reporting Date : **26-Sep-2025**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **----**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **7.4°C - Ice present**
No. of samples received / analysed : **7 / 7**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- [19/09/2025] This is an updated SRN which indicates the new scheduled release date for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - ED037-P Alkalinity as CaCO ₃ (Auto Titrator)	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EG049G-T Trivalent Chromium - Total	WATER - EG050G-T Total Hexavalent Chromium	WATER - EP080 BTEXN	WATER - NT-04 Nitrite and Nitrate
ES2528352-001	11-Sep-2025 07:55	US1	✓	✓	✓	✓	✓	✓	✓
ES2528352-002	11-Sep-2025 07:33	UW2	✓	✓					✓
ES2528352-003	11-Sep-2025 10:15	UW3	✓	✓					✓
ES2528352-004	11-Sep-2025 08:30	UL1	✓	✓	✓	✓	✓		✓
ES2528352-005	11-Sep-2025 00:00	QA	✓	✓	✓				✓
ES2528352-007	04-Sep-2025 00:00	TRIP SPIKE						✓	

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - ED041G Sulfate (Turbidimetric) as SO ₄ 2 by Discrete	WATER - EK059G Nitrite plus Nitrate as N (NOx) by Discrete	WATER - EK061G Total Kjeldahl Nitrogen as N (TKN) By Discrete	WATER - EK062G Total Nitrogen as N (TKN + NOx reported) By	WATER - EP005 Total Organic Carbon (TOC)	WATER - NT-01 Major Cations (Ca, Mg, Na, K)
ES2528352-001	11-Sep-2025 07:55	US1	✓	✓	✓	✓	✓	✓	✓
ES2528352-002	11-Sep-2025 07:33	UW2			✓	✓	✓	✓	
ES2528352-003	11-Sep-2025 10:15	UW3			✓	✓	✓	✓	
ES2528352-004	11-Sep-2025 08:30	UL1			✓	✓	✓	✓	
ES2528352-005	11-Sep-2025 00:00	QA			✓	✓	✓	✓	



Matrix: WATER			WATER - EA165-PH CO2 - Free and Total (Default)	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EK067G Total Phosphorus as P By Discrete Analyser	WATER - EP025 Dissolved Oxygen (DO)	WATER - EP074 (water) Volatile Organic Compounds	WATER - W-12 OC/OP Pesticides	WATER - W-18 TRH(C6 - C9)/BTEXN
Laboratory sample ID	Sampling date / time	Sample ID							
ES2528352-001	11-Sep-2025 07:55	US1			✓				
ES2528352-002	11-Sep-2025 07:33	UW2	✓	✓		✓			
ES2528352-003	11-Sep-2025 10:15	UW3	✓	✓					
ES2528352-004	11-Sep-2025 08:30	UL1			✓		✓	✓	
ES2528352-006	04-Sep-2025 00:00	TRIP BLANK							✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(WATER) ED037P: Alkalinity by PC Titrator